Probable sequence of events for the ASM attack

23. The probable sequence of events based on the evidence available to date is:

(a) Houthi and Saleh forces received advanced warning when the SWIFT-1 departed Aden. As the Aden-Assab transit is a routine voyage for the vessel, for which Houthi and Saleh intelligence could have worked out the transit time, then an arrival time in the target area could easily have been predicted;

(b) The vessel has limited courses that it can take, so an early warning vessel (dhow or rigid inflatable boat) could have been pre-deployed along the SWIFT-1's route;

(c) The early warning vessel sent a radio message to the launch platform when the vessel was in the target area;

(d) The ASM search radar could easily identify the vessel based on the information from an early-warning system;

(e) The ASM launcher was aligned on the correct azimuth (approximately 220^0 for a land launch), and a data algorithm then fed to the ASM from the launch platform as to the target vessel characteristics and approximate position;

(f) The ASM was launched. It climbed to approximately 50m altitude before separation of the booster rocket motor and then descended to a cruise altitude of approximately 20m to 30m above sea level. As it was probably programmed with a pre loaded target algorithm the ASM the terminal guidance seeker head in the ASM automatically searched for the target vessel;

(g) Once the terminal guidance seeker head acquired the target, the ASM descended to a height of between 5m to 7m above sea level for the terminal attack phase; then

(h) The ASM impacted on the target.

D. Relevant subsequent events

24. The SWIFT-1 attack triggered an immediate response from the US 5th Fleet, which deployed the 'Arleigh Burke' Class destroyers USS Mason (DDG-87) and USS Nitze (DDG-94) and the 'Austin Class' amphibious transport dock USS Ponce (AFSB 2015) to the area. These warships are able to monitor threats, protect shipping, and respond to any ASM attacks. As all these warships have an effective anti-ASM capability their deployment should improve the commercial maritime community's confidence in maritime security in the area.

25. On Sunday 9 October 2016 the USS Mason (DDG-87) was targeted by ASM[52] in a location relatively close to the SWIFT-1 attack just north of the Strait of Bab al-Mandab. The Pentagon spokesperson initially stated that the USS Mason did not open fire to interdict the two inbound detected missiles and that the missiles crashed into the sea,[53] but subsequent reports suggest that defensive anti missile systems may have been used.[54] The USS Mason again detected an ASM launch on Wednesday 12 October 2016,[55] and a further launch may have taken place on Saturday 18 October 2016. The first two missile launches towards the USS Mason elicited a military response from the US Government, and three Tomahawk cruise missiles were launched from USS Nitze against radar stations on the Yemeni coast near Al Hudaydah.

[52] Widely reported.
[53] http://edition.cnn.com/2016/10/10/politics/yemen-us-navy-targeted/.
[54] https://news.usni.org/2016/10/11/uss-mason-fired-3-missiles-to-defend-from-yemen-cruise-missiles-attack.
[55] 1) http://www.defense.gov/News/News-Releases/News-Release-View/Article/971834/statement-by-pentagon-press-secretary-peter-cook-on-uss-mason; and 2) http://www.defense.gov/News/Article/Article/971904/uss-mason-responds-to-missile-threat-off-yemens-coast.

Al Khawkah and Al Mukha on Thursday 13 October 2016.[56] The Panel has been unable to determine the post strike damage inflicted by these attacks.

26. The Panel has requested more specific technical information from the US Government on these ASM attacks and launches as it will help in the analysis of the SWIFT-1 attack, and thus the assessment of the threat to commercial shipping.

E. Conclusions

27. The Houthi and Saleh forces have demonstrated they had the technological capability to make a single attack on a large vessel in the area of Al Mukha and the Strait of al-Mandab. That technological capability will only last as long as:

(a) The Houthi and Saleh forces still have access to the old Yemeni naval stocks of missiles, supplied prior to the arms embargo. The dual missile attack against the USS Mason suggests they may; and

(b) The arms embargo is effective in ensuring there is no resupply of ASM to the Houthi and Saleh forces.

28. The Houthi-Saleh military alliance has potentially significantly increased the maritime threat to vessels transiting the Red Sea and Strait of Bab al-Mandab, or those delivering humanitarian aid to Yemen.

[56] 1) http://www.defense.gov/News/Article/Article/972322/strikes-target-radar-sites-in-yemen; and 2) http://www.defense.gov/News/Article/Article/972852/us-responds-to-missile-attacks-targets-3-radar-sites-on-yemens-coast.

Annex 14: Maritime attack against the MV Galicia Spirit

(STRICTLY CONFIDENTIAL)

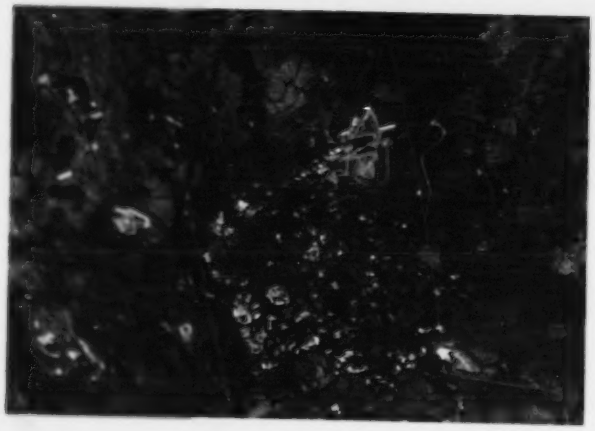
Annex 15: The Families, Clans, and Tribe of Bayt al-Ahmar

1. Ali Abdullah Saleh (YEi.003) is from the village of Bayt al-Ahmar[57] and the family of Afaash, which is part of the Afaash clan of the Sanhan tribe.[58] The Sanhan tribe is part of the Hashid tribal confederation.

2. Although Ali Abdullah Saleh (YEi.003) is not the 'Shaykh' or head of the tribe, he is the most powerful figure within the tribe given the fact that he was Head of State. This allowed him to dispense favours within the tribe and provide jobs, particularly within the military to fellow tribesmen. This both helped the tribe and helped Ali Abdullah Saleh (YEi.003), as it allowed him to place trusted individuals in positions of power.

Table 15.1
Bayt al-Ahmar families, clans and tribe

Group	*Name*		*Remarks*
Tribal Confederation	Hashid		
Tribe	Sanhan		
Village	Bayt al-Ahmar		
Families	Afaash	Afaash	Saleh family
		al-Akwa	
		Najar	
	al-Qadhi	al-Qadhi	
		al-Dhanayn	
		Jaabr	



[57] 15°07'35.7"N, 44°21'59.8"E.
[58] When Saleh's father, Abdullah, died, his mother, Nasiyyah, remarried Salih al-Ahmar, also from the Sanhan tribe.

Annex 16: Sons of Ali Abdullah Saleh (YEi.003)

(STRICTLY CONFIDENTIAL)

Annex 17: Nephews of Ali Abdullah Saleh (YEi.003)

(STRICTLY CONFIDENTIAL)

Annex 18: Wives of Ali Abdullah Saleh (YEi.003)

(STRICTLY CONFIDENTIAL)

Annex 19: Daughters of Ali Abdullah Saleh (YEi.003)

(STRICTLY CONFIDENTIAL)

Annex 20: Soldiers loyal to Ali Abdullah Saleh (YEi.003)

The following soldiers are known to have been killed fighting on the border between Saudi Arabia and Yemen during August 2016.[59]

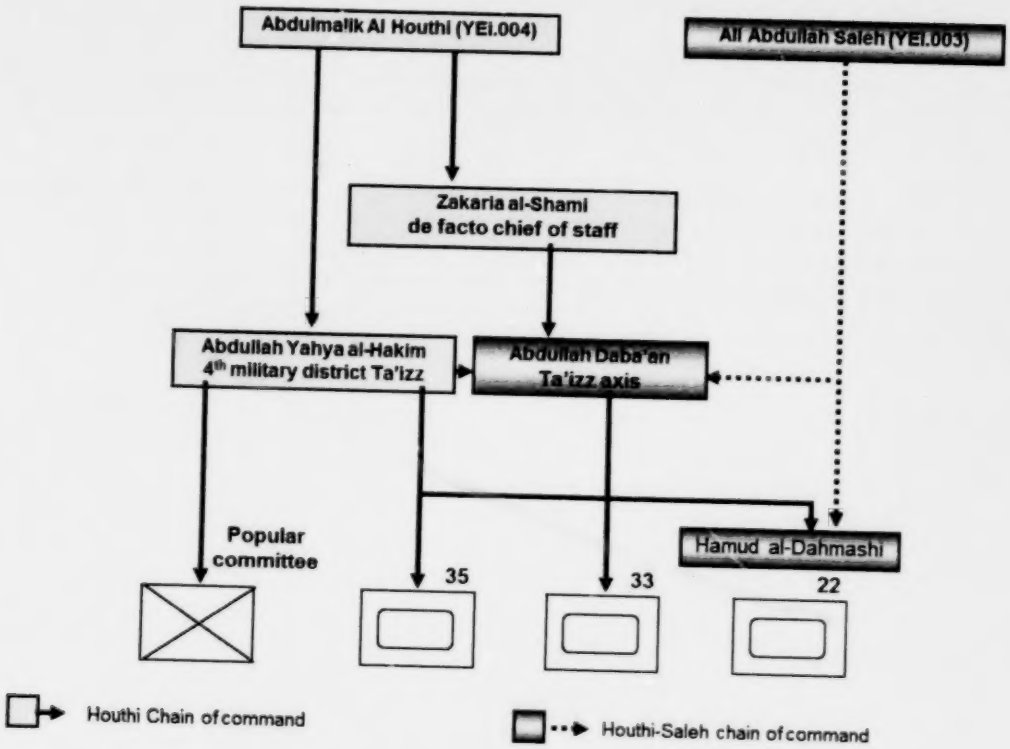
Table 20.1
Deceased soldiers loyal to Ali Abdullah Saleh (YEi.003)

Ser	*Name*	*Village*	*Tribe*
1	Sharif Ahmad		Sanhan
2	Muhammad Ahmad 'Alwan	Dhabwa	Sanhan
3	Abd al-Wali Muhammad 'Amār	Al Sawad	Sanhan
4	Abd al-Salam al-Araj	Bilad al-Rus	Sanhan
5	Fuad Abd al-Rahman Dalhus		Sanhan
6	Bilad al-Salih Muhammad al-Haduri	Al Sawad	
7	Hamir Salih Hazim		Sanhan
8			Sanhan
9	Ahmad Muhammad Jabir	Dar Salim	Sanhan
10	Sami Ahmad Najad	Al Sawad	Sanhan
11	Amran Hassan Sarfah	Bilad al-Rus	Sanhan

[59] Due to the difficulties in collecting the names and tribal affiliations of fighters killed in conflict, this list does not claim to be comprehensive. However, all the soldiers listed here are either members of the republican guards or the special guards, both of which were under the control of Ali Abdullah Saleh (YEi.003).

Annex 21: Houthi-Saleh alliance military structure

Figure 21.1
Houthi-Saleh alliance military structure



Annex 22: Background on the Houthi movement

1. The Houthis, also known as Ansar Allah,[60] are a Zaydi[61] revivalist group[62] that formed in the 1980s as a response to perceived state-sponsored attempts at cultural and religious eradication. The Zaydi imamate[63] of north Yemen was overthrown in 1962, ending more than a millennium of rule by local *sayyids*, descendants of the Prophet Muhammad, who formed the ruling class.[64] In the aftermath of the 1962 civil war and the successive Republican regimes that followed, Zaydi *sayyids* were discriminated against to the point that many within the community felt they were on the verge of extinction. These tensions boiled over in 2004 in the first of what would come to be known as the "Houthi Wars," in which the central Government in Sana'a, headed by Ali Abdullah Saleh (YEi.003), fought the Houthis and their local allies.[65] Five more rounds of conflict would follow over the next six years.[66]

2. In the aftermath of the Arab spring and President Saleh's negotiated resignation in early 2012, the Houthis moved to consolidate control in and around the Governorate of Sa'dah, where they were based. In late 2014, while President Hadi was juggling multiple challenges to his rule, the Houthis pushed into Sana'a and by January 2015 they had placed President Hadi under house arrest. Two months later, following President Hadi's escape to Saudi Arabia via Aden, the Saudi Arabia-led coalition launched Operation Decisive Storm on 26 March 2015, with the stated goal of returning President Hadi to power.

---

[60] Literally, the Partisans of God.

[61] Zaydis are a Shi'ite sect of Islam that is doctrinally distinct from the type of Shi'ism practiced in countries such as Iraq or Iran, which is often referred to as twelver Shi'ism. Zaydi Shi'ism, as it has historically been practiced in Yemen, is often referred to as "fiver Shi'ism." Some scholars of Yemen also refer to Zaydism as the "fifth school of Sunni Islam," highlighting the traditional middle ground it has occupied between Sunnis and Twelver Shi'a.

[62] Zaydi revivalists denote those who adhere to the traditional practice of Zaydism. For example Abdulmalik al-Houthi (YEi.004) is a Zaydi by heritage and adheres to traditional teachings of Zaydism. He is a Zaydi revivalist. On the other hand, Ali Abdullah Saleh (YEi.003) is a Zaydi by heritage but not in practice, and therefore is not a revivalist.

[63] In Zaydism the imamate is a religious and political office that headed the theocratic state, which ruled northern Yemen, with varying degrees of success, from 893 - 1962.

[64] The Houthis are a *sayyid* family.

[65] The original leader of the Houthi armed group was Husayn Badr al-Din al-Houthi, a former member of parliament from the Hizb al-Haqq party and the older half-brother of Abdulmalik al-Houthi (YEi.004). Husayn Badr al-Din al-Houthi was killed in September 2004.

[66] The second leader of Houthi movement was Badr al-Din al-Houthi, the father of both Husayn and Abdulmalik. Badr al-Din al-Houthi was killed in 2010 by an AQAP suicide bomber.

Annex 23: Houthi family tree

(STRICTLY CONFIDENTIAL)

Annex 24: Houthi prisoners released in Ma'rib (September 2016)[67]

Table 24.1
Houthi prisoners released in Ma'rib

Ser	*Name*	*District*	*Governorate*
1	Bilal Saleh Ali al-Rabahi	al-Rajim	al-Mawhit
2	Ali Hasan Ali Saleh al-Asfari	Malhan	al-Mawhit
3	Muhammad Ali Ali Saleh al-Dharasi	Mitam	Ibb
4	Muhammad Ali Fatah Allah al-Hamati	Hafash	al-Mawhit
5	Mansur Muhammad Hasan al-Muamari	al-Rajim	al-Mawhit
6	Abdullah Ali Shatir Shatir	al-Madina	Amran
7	Ali Abdullah Salim al-Raymi		Raymah
8	Muhammad Ali Ahmed Sad al-Din	Bani al-Harith	Sana'a
9	Muhammad Saleh	Bani Hashish	Sana'a
10	Az al-Din Abdullah Ahmed al-Shalali	Bani Balhul	Sana'a
11	Anwar Ahmed Haydar	Ta'izz	Ta'izz
12	Najad Muhsin Abdullah Muqna'a	Dhawran Anis	Dhamar

[67] The release took place on 1 September 2016. The Panel believes that the different governorates from which these fighters came illustrates how the Houthis move militia fighters throughout the territory under their control.

Annex 25: Houthi appointed military district commanders

Table 25.1
Houthi appointed military district commanders

military district	*Location*	*Name*	
1	Sayyun	No known Houthi Commander	
2	Mukalla	No known Houthi Commander	
3	Ma'rib	Unknown[68]	
4	Aden/Ta'izz	Abdullah Yahya al-Hakim	(YEi.002)
5	Hudaydah	Muhammad Said al-Hariri	
6	Amran / Sa'dah	Unknown[69]	
7	Dhamar / Sana'a	Ali Al Arjah Hamid Mujahid Al Knurashi	

[68] Previous Houthi commander, Mubarak al-Mishn al-Zayadi, was killed in the Saudi Arabia-led coalition strike on the Funeral Hall in Sana'a on 8 October 2016.
[69] Previous Houthi commander, Muhammad al-Hawari, was killed in the Saudi Arabia-led coalition strike on the Funeral Hall in Sana'a on 8 October 2016

Annex 26: Houthi appointees in Dhamar[70]

Table 26.1
Houthi appointees Dhamar

Ser	*Name*	*Position*	*Village*
1	Muhammad Muhsin Muhammad Jalan	assistant director for security	
2	Abdu Saleh Muhammad Amar	assistant director of security, police affairs	
3	Ibrahim Ali Ahmed al-Kibsi	director, administration affairs	
4	Abd al-Aziz Muhammad Ali Khayran	deputy director, criminal Investigations	
5	Muhammad Husayn al-Gharabani	deputy director, prison administration	
6	Muhammad Ali Muhammad Abbas	director, financial affairs	
7	Ahmed Qasim Ali al-Sharfi	deputy, administration of officer affairs	
8	Ismail Husayn al-Marwani	deputy director, civil defence	
9	Husayn Ismail Rawayah	deputy director, traffic	
10	Ahmed Muhammad Najum al-Din	deputy director, local affairs	
11	Muhammad Muhammad Abd al-Wahhab al-Daylami	deputy director, information and planning	
12	Adil Ali Yahya Mutahir Nayyib	director, public relations	
13	Husayn Abdullah Ali al-Sharfi	director, industrial works	
14	Ahmed Saleh al-Shaubi	director, department of investigations	
15	Muayyad Abd al-Salam al-Taus	deputy director, communications	
16	Abdullah Muhammad Ali al-Washali	deputy director, leadership and command	
17	Muhammad Yahya Muhammad al-Murtadhi	deputy director, support and insurance	
18	Abd al-Wahhab Abbas Muhammad al-Mushki	deputy director, training and qualifications	
19	Mutahir Abdullah Muhammad al-Nahari	deputy director, police	Jabal Sharq
20	Jihad Mutahir al-Marwani	deputy director, police	Jahran
21	Nasir Nasir Ali al-Bukhayti	deputy director, police	Dhawran
22	Ali Ali Husayn Mayis	deputy director, police	al-Manar
23	Saleh Ahmed Husayn al-Khalqi	deputy director, police	Atimah
24	Naji Muhammad Ali Saleh al-Khalali	deputy director, police	al-Huda
25	Yahya Abd al-Wahhab al-Daylami	deputy director, police	al-Miqa'ah
26	Abd al-Aziz Ismail al-Amdi	deputy director, police	Anis
27	Muhammad Abdullah Sharf Abu Talib	deputy director, police	Greater Wasab

[70] This table uses the Houthi appointees in one governorate, Dhamar, to illustrate how the Houthis take advantage of the existing bureaucratic structure, grafting a loyalist director or deputy director on to what is already in place. http://www.almasdaronline.com/article/82943.

Annex 27: Prominent AQAP figures[71]

Table 27.1
Prominent AQAP figures

Ser	*Name*	*Role*	*Remarks*
1	Qasim Yahya al-Raymi	Leader	(QDi.282)/ Yemeni
2	Ibrahim Asiri	Chief Engineer/Bombmaker (IED)	Saudi
3	Muhammad Abd al-Karim al-Ghazali	Financial Head	Yemeni
4	Khaled Umar Batarfi	Battle commander	Yemeni
5	Khamis Arfaj al-Marwani	Head of AQAP, al-Jawf	Yemeni
6	Muhammad Umar	Military Commander, al-Jawf	Yemeni
7	Wa'il Sayf (Abu Salim al-Adani)	Head of AQAP, Aden	Yemeni
8	Abu Yusif al-Lahji	Head of AQAP, Lahj	Yemeni
9	Ghalib al-Zayadi	AQAP leader, Ma'rib	Yemeni
10	Salim al-Najdi	Media figure	Saudi
11	Muhammad Abdullah Husayn Daramah	Judge on Shariah Council	
12	Ibrahim al-Quso	Propagandist	Former Guantanamo Detainee / Sudanese
13	al-Khadr Abdullah al-Walidi	Battle commander	
14	Khalid al-Daba	AQAP leader, Lahj	May be under arrest[72]
15	Muntasir Badi	Financial figure in Abyan	

[71] This table has been compiled from a variety of sources, including confidential sources, interviews with individuals inside and outside of Yemen, open sources, news reports, and AQAP documents.
[72] The Panel has received one report, which it has been unable to verify, that security forces loyal to President Hadi may have arrested Khalid al-Daba.

Annex 28: Summary of reported PBIED and SVIED attacks (2016)

Table 28.1
Summary of reported PBIED and SVIED attacks (2016)

Ser	*Date*	*Location*	*Device Type*	*Target*	*Civilian Fatalities*[73]	*Military Fatalities*	*Civilians Injured*	*Military Injured*	*Claimed by*	*Remarks*
1	5 Jan 2016	Aden	SVIED	General Shallal Shayae, Aden Police Chief	4	8	0	0	AQAP	SVIED
2	28 Jan 2016	Aden	SVIED	Presidential Residence	2	5	ISIL		ISIL	Perpetrator named as 'Abu Hanifa Al-Hollandi'.
3	29 Jan 2016	Aden	SVIED	Police CP[74]		7		7	ISIL	Perpetrator named as 'Oweis al Adani'.
4	17 Feb 2016	Aden	SVIED	Ras Abbas Military Camp		14		60	ISIL	Perpetrator named as 'Abu Isa Al-Ansari'.
5	29 Feb 2016	Aden	SVIED	Government forces in Sheikh Othman District	4	0	0	0	ISIL	
6	2 Mar 2016	Aden	SVIED	Brigadier General Adel Al-Halemi, Aden Security Chief	0	0	0	0	ISIL	Residence attacked.
7	25 Mar 2016	Aden	SVIED	CP in Shaab District					ISIL	
8	25 Mar 2016	Aden	SVIED	CP in Shaab District	17	10	NK	NK	ISIL	
9	25 Mar 2016	Aden	SVIED	CP in Mansura District					ISIL	Device in an ambulance
10	12 Apr 2016	Aden	PBIED	Government forces in Sheikh Othman District	4	0	7	2	ISIL	At bus stop
11	15 Apr 2016	Aden	SVIED	Foreign Ministry	0	0	0	0	ISIL	SVIED
12	17 Apr 2016	Aden	SVIED	CP near airport	4	2	0	0		SVIED

[73] Excluding the 'suicide' bomber.
[74] Check Point.

Ser	Date	Location	Device Type	Target	Civilian Fatalities[*]	Military Fatalities	Civilians Injured	Military Injured	Claimed by	Remarks
13	24 Apr 2016	Zinjibar	SVIED	Military convoy	7	14	0	0		
14	28 Apr 2016	Aden	SVIED	General Shallal Shayae, Aden Police Chief	0	2	0	0		SVIED
16	11 May 2016	Al-Qatan	SVIED	Major General Abdul-Rahman Al-Halili, Commander, 1st Military District	6	2	5	0	AQAP	
17	12 May 2016	Mukalla	SVIED	Gate of Naval Base					ISIL	Perpetrator named as 'Hamza Al-Muhajir'.
18	12 May 2016	Mukalla	SVIED	Inside Naval Base	0	16	0	8	ISIL	
19	12 May 2016	Mukalla	SVIED	Major General Faraj Salmeen, Commander, 2nd Military District					ISIL	HQ attacked.
20	15 May 2016	Mukalla	PBIED	Police Recruitment Centre, Fuwah District	41		60		ISIL	Perpetrator named as 'Abu Al-Bara Al-Ansari'.
21	15 May 2016	Mukalla	PBIED	Major General Mubarak Al-Oubthani, Hadramawt Security Chief	0	6	0	1	ISIL	
22	16 May 2016	Mukalla	PBIED	Police Recruitment Centre, Fuwah District	0	0	0	0	ISIL	
23	23 May 2016	Aden	SVIED	Military recruitment centre queue, Khor Maksar District	20	0	60	0	ISIL	Perpetrator named as 'Abu Ali Al-Adeni'.
24	23 May 2016	Aden	PBIED	Commanders residence, queue of recruits	25	0	NK	0	ISIL	

Ser	*Date*	*Location*	*Device Type*	*Target*	*Civilian Fatalities*[*1]	*Military Fatalities*	*Civilians Injured*	*Military Injured*	*Claimed by*	*Remarks*
25	27 June 2016	Mukalla	PBIED	Intelligence Base	0	38	24	0	ISIL	
26	6 Jul 2016	Aden	SVIED	Solaban Military Base	14	10	0	0	AQAP	
27	18 Jul 2016	Mukalla	SVIED	Military CP	0	0	0	0	AQAP	
28	20 Jul 2016	Aden	IED	Aden	4	0	6	0	AQAP	
29	2 Aug 2016	Aden	SVIED	Military base	0	6	0	12		
30	2 Aug 2016	Aden	SVIED							
31	7 Aug 2016	Lahj	SVIED	Military patrol	0	10	18	0		
32	18 Aug 2016	Near Lawder, Abyan	SVIED	Military patrol	0	4	0	4	AQAP	
33	29 Aug 2016	Aden	SVIED	Military base	0	72	0	80	ISIL	
34	11 Sep 2016	Aden	SVIED		0	10	0	0		
35	11 Sep 2016	Abyan	SVIED	Military position	0	0	0	14		
36	1 Oct 2016	Aden	PBIED	Civilians	0	2	0	4		
37	27 Oct 2016	Lawder, Abyan	IED	Police patrol					AQAP	
38	29 Oct 2016	Aden	SVIED	Central Bank	0	0	5	0		
39	16 Nov 2016	Shabwah	SVIED	Governor	1		2			
40	10 Dec 2016	Aden	PBIED	Military base		48		29	ISIL	
41	18 Dec 2016	Aden	PBIED	Military base		40		50	ISIL	

Annex 29: US air and drone strikes in Yemen (2016)[75]

Table 29.1
Summary of US air and drone strikes in Yemen (2016)

Ser	*Date*	*Location*	*Casualties*		*Remarks*
			Fatal	*Injured*	
1	3 Feb 2016	Shabwah	6		
2	29 Feb 2016	Hadramawt	3		
3	22 Mar 2016	Hadramawt	56		AQAP training camp
4	30 Mar 2016	Shabwah	2		
5	23 Apr 2016	Ma'rib	2		
6	25 Apr 2016	Shabwah	2		
7	25 Apr 2016	Abyan	2		
8	28 Apr 2016	Shabwah	4	1	
9	19 May 2016	Shabwah	4		
10	8 Jun 2016	Bayda'	2		
11	10 Jun 2016	Ma'rib	2		
12	12 Jun 2016	Shabwah	2	1	
13	1 Jul 2016	Shabwah	2		
14	4 Jul 2016	Shabwah	2		
15	8 Jul 2016	(Central Yemen)	1		
16	16 Jul 2016	(Central Yemen)	6	1	
17	4 Aug 2016	Shabwah	3		
18	24 Aug 2016	Shabwah	4		
19	30 Aug 2016	Shabwah	3		
20	4 Sep 2016	Shabwah	6	1	
21	20 Sep 2016	Ma'rib	2		
22	22 Sep 2016	Bayda'	2		
23	29 Sep 2016	Bayda'	1	1	
24	6 Oct 2016	Shabwah	2		
25	18 Oct 2016	Shabwah	6		
26	21 Oct 2016	Ma'rib	5		
27	20 Nov 2016	Bayda'	1		
28	24 Nov 2016	Bayda'	2		
29	30 Nov 2016	Hadramawt	3		
30	13 Dec 2016	Ma'rib	3		

[75] Information compiled from US Central Command.

Annex 30: Prominent ISIL figures[76]

Figure 30.1
Prominent ISIL figures

Ser	*Name*	*Role*	*Remarks*
1	Muhammad Said Umar Bawazir (Abu Maali al-Qirshi)	An ISIL leader	
2	Nasir al-Ghaydani (Abu Bilal al-Harbi)	An ISIL leader	Saudi Arabian[77]
3	Khaled Abdullah al-Marfadi	Military commander	Yemeni[78]
4	(Abu Abd al-Rahman al-Muhajir)[79]	Shariah official	
5	(Abu Saleh)[80]	Military commander	
6	Khaled Umar al-Marfadi	Financial official	Yemeni[81]

[76] This table has been compiled from a variety of sources, including confidential sources, interviews with individuals inside and outside of Yemen, open sources, and news reports. Names in parentheticals indicate a *nom de guerre* or *kunya*.
[77] In the mid-term update the Panel reported that AQAP claimed that al-Harbi had been killed in Hadramawt when a hand grenade in a safe house detonated. The Panel has not been able to confirm this information.
[78] al-Marfadi is from Yafa'a.
[79] al-Muhajir reportedly also uses the *kunya*: Abu Muhammad al-Kanani.
[80] Abu Saleh reportedly also uses the *kunya*: Abu Husayn.
[81] Also from Yafa'a.

Annex 31: Government appointed Military District commanders

Table 31.1
Government appointed Military District commanders.

Military District	*Area*	*Name*
1	Sayyun	Saleh Muhammad Tamis
2	Mukalla	Faraj Salamin al-Bahasani
3	Ma'rib	Adil Hashim al-Qaymiri[82]
4	Aden/Ta'izz	Fadhil Hasan al-Amri
5	Hudaydah	Tawfiq Muhammad Abdullah al-Qayz
6	Amran / Sa'dah	Amin al-Wa'ili
7	Dhamar / Sana'a	Ismail Hasan Zahjuh

[82] Major General Adil Hashim Al-Qaymiri was appointed by Vice President and Head of the Government's Armed Forces, Ali Muhsin al-Ahmar, in October 2016 following the death of the previous Commander of the 3rd Military District, Major General Abd al-Rabb al-Shadadi, on 7 October 2016. Major General Adil Hashim al-Qaymiri is from Ta'izz. In 2011, when he was commander of the 125th Mechanised Brigade, he broke with then President Ali Abdullah Saleh (YEi.003) to support the protesters. In 2012, President Hadi appointed him as commander of the 125th Mechanized Infantry Brigade in al-Jawf, and later al-Qaymiri was named Axis Commander in al-Jawf. In 2015, President Hadi named him commander of the 5th Military District (Hudaydah).

Annex 32: Timeline of key security events concerning Yemen (2016)

Table 32.1
Timeline of key security events concerning Yemen (2016)

Ser	*Event*	*Location*	*Date (2016)*
1	Cessation of Hostilities Agreement	Yemen	10 April
2	Peace talks begin	Kuwait	20 April
3	AQAP withdrawal from Mukalla	Mukalla	25 April
4	Car bomb targeting Aden Governor, Aydrus al-Zubaydi	Aden	15 July
5	Houthi-Saleh Political Council announced	Sana'a	28 July
6	First soldier loyal to Saleh killed on border with Saudi Arabia	Border with Najran	31 July
7	Peace talks end	Kuwait	15 August
8	Houthi-Saleh Supreme Political Council formed	Sana'a	15 August
9	Houthi-Saleh Supreme Political Council issue 1st Decree	Sana'a	15 August
10	Saudi-Arabia led coalition hits Abs hospital	Hajjah	15 August
11	USA announces reduction of staff in Joint Planning Cell	Saudi Arabia	19 August
12	ISIL suicide bombing, killing 54	Aden	29 August
13	Further reports of forced displacement of Northerners	Aden	27 September
14	Houthis attack UAE SWIFT vessel	Red Sea Coast	1 October
15	Abd al-Rab al-Shadadi, Government 3rd Military District Commander killed	Ma'rib	7 October
16	Saudi Arabia-led coalition strike on funeral hall, killing 200+	Sana'a	8 October
17	Houthis fire anti shipping missiles towards two US Naval ships	Red Sea Coast	9 October
18	Houthis 'target' USS Mason with anti-shipping missiles	Red Sea Coast	12 October
19	US naval ship fires three Tomahawk cruise missiles at Houthi radar installations	Red Sea Coast	13 October
20	Mansur Mujahid Nimraan, Houthi Axis Commander in Hudaydah killed	Hudaydah	14 October
21	72-hours Cessation of Hostilities begins	Yemen	19 October
22	Cessation of Hostilities ends	Yemen	23 October
23	Houthi-Saleh Supreme Political Council announces formation of 42-person government	Sana'a	28 November

Annex 33: Active 'battle fronts' in Yemen (2016)

A. Ta'izz 'front'

1. Ta'izz continues to witness heavy fighting between military units loyal to Ali Abdullah Saleh (YEi.003) and militias under the command of Houthi fighters, who are arrayed against local resistance forces, which have included Salafi fighters as well as AQAP members,[83] in addition to troops loyal to President Hadi. Both sides have engaged in the targeted destruction of homes, kidnappings, as well as indiscriminate shelling, which has claimed the lives of civilians. The humanitarian situation remains extremely dire.

2. The Panel has documented the following brigades taking part in the fighting: 17th Infantry Brigade, 22nd Armoured Brigade from the Republican Guards, 33rd Armoured Brigade, 35th Armoured Brigade and 170th Air Defence Brigade. Below is a brief sketch of the prominent figures in the conflict, which the Panel has identified, on the four sides: Houthis, Saleh, Government of Yemen, and local "resistance".[84]

Table 33.1
Prominent Houthi figures on the Ta'izz front

Ser	*Name*	*Position*	*Remarks*
1	Abdullah Yahya al-Hakim (Abu Ali)	Houthi commander, 4th military district	(YEi.002)
2	Abdu Ali al-Janadi	Houthi-appointed governor of Ta'izz	Appointed 28 November 2015
3	Abd al-Hakim al-Junaid	Houthi commander	Brother of #4
4	Mahmoud al-Junaid	Houthi commander, al-Sarari area, near Mount Sabr	Brother of #3
5	Akram al-Junaid	Houthi commander, Eastern Ta'izz	Facilitated Houthi entry into Ta'izz
6	Hamud al-Hashidi	Houthi appointed director of intelligence	

[83] The Panel is aware of reports indicating that two high-level ISIL commanders were killed in the fighting in Ta'izz, but has been unable to independently verify these reports.

[84] The Panel has chosen to put "resistance" in quotes, because it realizes that not all locals in Ta'izz have sided with the "resistance." Indeed, many have sided with the Houthis.

Table 33.2
Prominent figures loyal to Saleh on the Ta'izz front

Ser	*Name*	*Position*	*Remarks*
1	Abdullah Hizam Naji al-Dhaban[85]	Axis commander, Ta'izz	From Saleh's Sanhan tribe
2	Hamud Hasan al-Harithi	Brigadier General, commander of central security forces, Ta'izz	
3	Hamud al-Dahmashi	commander, 22nd armoured brigade, republican guard	
4	Ali Numan Muhammad al-Saghir	Lieutenant Colonel, 33rd armoured brigade	Artillery specialist under command of al-Dhaban
5	Amar Daghish	Lieutenant Colonel, 33rd armoured brigade	Under command of al-Dhaban
6	Ahmed al-Araj	Lieutenant Colonel, 33rd armoured brigade	Specialist in Katusha FFR, under command of al-Dhaban
7	Mansur Mujayayr	Commander of Khaled Camp for 35th armoured brigade	
8	Zakariya al-Muta'a	republican guard commander	
9	Muhammad Abd al-Wasa al-Qahtan	Tribal Shaykh	Kidnapped on 9 November 2016 reportedly by forces operating under the command of Yusif al-Shiraji

Table 33.3
Prominent Government of Yemen figures on the Ta'izz front

Ser	*Name*	*Position*	*Remarks*
1	Fadhil Hasan al-Amri	Government Commander, 4th Military District	
2	Khalid al-Fadhil	Axis Commander, Ta'izz	
3	Yusif Ali al-Shiraji[86]	Government Commander	
4	Adnan Muhammad Muhammad al-Hamadi	Government Commander, 35th Armoured Brigade[87]	

[85] Staff Brigadier General Abdullah Hizam Naji al-Dhaban is also commander, 33rd armoured brigade, and has a history in Ta'izz. In 2011, Ali Abdullah Saleh (YEi.003) named al-Dhaban commander, 33rd armoured brigade (he was previously Commander, 107th Mechanised Brigade), where he reacted violently to protests against Saleh's rule. As a result, under President Hadi, the 33rd Armoured Brigade was transferred to Baydha'. However, on 6 June 2015 President Hadi fired al-Dhaban.

[86] The Panel is uncertain if al-Shiraji remains in Ta'izz. He was in the city as late as mid-November, but has since been named an 'adviser' to the Ministry of Defence and is no longer Axis Commander in Ta'izz, a position he took up on 15 January 2016.

[87] al-Hamadi does not have control over the entire brigade as it is split between forces loyal to President Hadi (35th Armoured Brigade) and forces loyal to the Houthis-Saleh alliance (35th armoured brigade).

Ser	*Name*	*Position*	*Remarks*
5	Sadiq al-Sarhan	Government Commander, 22nd Armoured Brigade, Republican Guard[88]	President Hadi appointed.
6	Abd al-Rahman al-Shamsani	Commander, 17th Infantry Brigade[89]	President Hadi appointed.
7	Abd al-Walid Sarhan	Official in the Political Security Organization	
8	Nabil al-Maqrami	Colonel, 35th Armoured Brigade	

Table 33.4
Prominent "Popular Resistance" figures on the Ta'izz front[90]

Ser	*Name*	*Position*	*Remarks*
1	Adil Abdu Farea (Abu al-Abbas)[91]	Salafi commander	Most powerful Resistance figure.
2	Hamud Said al-Mikhlafi	Former Brigadier General in the Political Security Organization (PSO)	Has lost funding and power in 2016
3	Muhammad Ibrahim al-Mikhlafi	Head of Resistance Consultative Council, Mount Sabir	Deputy Director of Police, appointed 1 September 2016
4	Nail al-Adimi	Resistance leader	
5	Abd al-Qawi al-Mikhlafi	Resistance leader, associated with Islah	
6	Abdu Hamud al-Saghir	Resistance leader, western Ta'izz	
7	Nabil al-Wasili[92]	Salafi commander	
8	Abu al-Suduq[93]	Salafi commander	

[88] The majority of 22nd armoured brigade is loyal to Saleh.
[89] The brigade is split between those loyal to President Hadi (17th Infantry Brigade) and those loyal to the Houthis and Saleh (17th infantry brigade) .
[90] The Panel uses "resistance" to designate forces aligned against the Houthi-Saleh military alliance in Ta'izz. The "resistance" is a loose coalition of militias bound together only by a common enemy. In 2016, Salafis, particularly those under Abu al-Abbas, have become the most powerful individual component to this rather nebulous constellation of groups.
[91] Abu Abbas is the most powerful resistance fighter in Ta'izz. The Panel has documented trips he has taken to Aden in the south, as well as reports of visits to foreign countries. Abu Abbas was born in Ta'izz in 1971. He studied at Dar al-Hadith in Sa'dah before returning to Ta'izz to take part in the fight against Houthi and Saleh forces there. He is a person of interest for the Panel. For more on his background see a two-part interview he gave to al-Medina al-An, which was published in late October 2016. http://www.alwahdawi.net/news_details.php?sid=16867 The Panel believes that it is Abu al-Abbas' forces that have welcomed AQAP fighters into the conflict in Ta'izz.
[92] Studied at Dar al-Hadith in Sa'dah.
[93] Like Abu al-Abbas and Nabil al-Wasili, Abu al-Suduq studied at Dar al-Hadith in Sa'dah. However, Abu al-Suduq's fighters have clashed with Abu al-Abbas' men.

B. Sirwah, Ma'rib

Fighting is also ongoing in Ma'rib, largely between Houthi forces on one side and so-called "popular resistance" forces and troops loyal to President Hadi on the other, including members of the 14th Armoured Brigade.[94] The fighting has ebbed and flowed throughout the period covered by this report, and on 1 September 2016, the Houthis and the resistance agreed to a prisoner exchange of 12 prisoners each.[95] The Houthi prisoners released came from several different governorates within Yemen, which illustrates how the group is moving fighters around the country. On 7 October 2016, Major General Abd al-Rabb al-Shadadi, the military commander for the 3rd Military District loyal to President Hadi, was killed.[96] He was replaced by Major General Adil Hashim al-Qaymiri.[97] Vice President Ali Muhsin al-Ahmar has also spent a significant amount of time in Ma'rib throughout the second half of 2016.

C. Saudi border

Elements of the Republican Guards loyal to Ali Abdullah Saleh (YEi.003) began fighting on the Saudi border with Jizan and Najran (Saudi Arabia) in late July and early August 2016. Fighting continues in this area, and Houthi-Saleh forces have also launched ballistic missiles into these regions (see annex 42).

D. Nihm, Sana'a

Throughout the period covered by this report, fighting has been ongoing in the Nihm region, just east of Sana'a. Militias loyal to Abdulmalik al-Houthi (YEi.004) and troops loyal to Ali Abdullah Saleh (YEi.003), including the 62nd mechanised infantry brigade from the republican guards,[98] are allied against militias loyal to President Hadi as well as against regular troops. Much of the fighting has centred on the taking and re-taking of mountains and other strategic points in the region. Additionally, the Saudi Arabia-led coalition continues to strike targets inside the city of Sana'a.

E Other areas

The Panel has also noted fighting in Hajjah, particularly in Midi,[99] continued clashes in Jawf, and periodic raids and reprisals in Bayda'a. The Saudi Arabia -led coalition continues to strike targets throughout areas held by the Houthis. Abyan, Aden and Hadramawt continue to suffer under AQAP and ISIL attacks.[100]

---

[94] On 8 September 2016, the Commander of the 14th Armoured Brigade, which used to be part of the Republican Guards, Staff Brigadier General Muhsin al-Daari, was wounded in the fighting. See: http://www.yemenakhbar.com/yemen-news/490041.html Most of the 14th Armoured Brigade has sided with President Hadi.

[95] See annex 24 for a list of the Houthi prisoners exchanged. The panel was unable to confirm the identities of the resistance fighters released.

[96] At al-Shadadi's funeral, held on 14 October 2016, six days after the Saudi-led coalition attack on Ali al-Rowayshan's funeral in Sana'a, two bombs went off, killing al-Shadadi's older brother, Salim Qasim al-Shadadi, and Lieutenant Muhammad Nasir Murshid Shurif, the Guard Commander for the governorate of Sana'a. See: http://www.alkhaleej.ae/alkhaleej/page/d50574bd-bc7c-4b1c-b5cf-c49b5d9b2ec4.

[97] For the Government of Yemen's Military Commanders see annex 31. al-Qaymiri's previous position had been as Inspector General for Yemen's Armed Forces.

[98] The 62nd mechanised infantry brigade from the republican guards under the command of Major Murad al-Awbali, which is based in Amran, participated in the fighting in Nihm. Al-Awbali is now commander of the Republican Guards, replacing Brigadier General Ali bin Ali al-Ja'ifi, who died on 10 October 2016, from wounds sustained two days earlier in the Saudi Arabia-led coalition attack on a community hall in Sana'a.

[99] The Panel has received information that Abd al-Khaliq al-Houthi (YEi.001) is leading Houthi forces in this area and that they are fighting alongside elements of the republican guard. Another prominent Houthi figure, Yusif al-Madani, who is married to the daughter of Husayn al-Houthi (deceased 2004) is reportedly active on this front as well.

[100] For a list of major security events in 2016 see annex 32.

Annex 34: Battlefield captured weapons in Houthi or AQAP use (2016)

1. The Panel has identified a number of weapons that were in the possession of individual fighters affiliated with either the Houthis or AQAP. The weapons had been either captured after combat between Saudi Arabia-led coalition and the Houthis or AQAP, or after misdirected air resupply drops by the Saudi Arabia-led coalition. In the longer term the majority of these weapons will be of little use to Houthi or Saleh forces as the ammunition needed does not match the proliferation of weapons captured from the Yemeni national stockpile and now in the possession of Houthi and Saleh forces.

Table 34.1
Summary of tracing requests for weapons identified in possession of Houthi fighters

Weapon Type	*Manufacturer State*[101]	*User State*	*Notes / result of tracing request*
Glock 19 Gen 4 9 x 19mm self loading pistol	USA		Manufacturer confirmed supply to Yemen.
Instanza, C-90-CR-RB anti-armour rocket launchers	Spain	Saudi Arabia	Manufacturer confirmed supply to Saudi Arabia. No response from Saudi Arabia to Panel enquiry.[102]
66mm Light Anti Tank Weapon (LAW)	USA	Saudi Arabia	No tracing request sent as: 1) Saudi Arabia known to be a user of this weapon type; and 2) over ten years old.
LRT-3 SWS 12.7mm sniper rifle	Canada	Saudi Arabia	Manufacturer confirmed supply to Saudi Arabia. No response from Saudi Arabia to Panel enquiry.
SSTI Kinetics, AR 80 5.56mm Assault Rifle	Singapore		The weapon with this serial number was initially supplied to Yugoslavia in December 1990, but this is not that weapon, it is a copy.[103]
Steyr AUG 5.56mm Assault Rifle	Austria	Saudi Arabia	No tracing request sent as: 1) Saudi Arabia known to be a user; and 2) no serial number visible.

[101] The Panel is not implying that for this enquiry that any of these Member States have acted in violation of the targeted arms embargo on Yemen imposed by resolution 2216 (2015). The Panel's tracing requests were aimed at better understanding how weapons are being smuggled into Yemen for the benefit of individuals listed by the Security Council Committee established pursuant to resolution 2140 (2014) or by other individuals subject to the targeted arms embargo.

[102] Panel requests to the Permanent Mission of Saudi Arabia dated 17 June, 8 July and 24 August 2016.

[103] Letter from Permanent Mission of Singapore dated 17 October 2016.

Table 34.2
Summary of tracing requests for weapons identified in possession of AQAP fighters

Weapon Type	*Manufacturer State*[104]	*User State*	*Result of tracing request*
RPG-32 *Nashshab* Rocket Launcher	Jordan	Jordan	No response to Panel enquiry.[105]

Figure 34.1
AR80 5.56mm assault rifle (copy)

Figure 34.2
Instanza C-90-CR-RB rocket launcher[106]

Figure 34.3
LRT-3 SWS 12.7mm anti-material rifle

Figure 34.4
Glock 19 Gen 4 9 x 19mm Pistol

[104] The Panel is not implying that for this enquiry that any of these Member States have acted in violation of the targeted arms embargo on Yemen imposed by resolution 2216 (2015).
[105] Panel requests to Permanent Mission of 11 April and 8 July 2016.
[106] The manufacturer, Instanlaza S.A confirmed that they had supplied this ammunition to a member State of the Saudi Arabia-led coalition. The possession by the Houthi is as a result of a misdirected airdrop by the Saudi Arabia-led coalition.

Figure 34.5
Steyr AUG Assault Rifle[107]

Figure 34.6
RPG-32 'Nashshab'[108]

Figure 34.7
66mm LAW

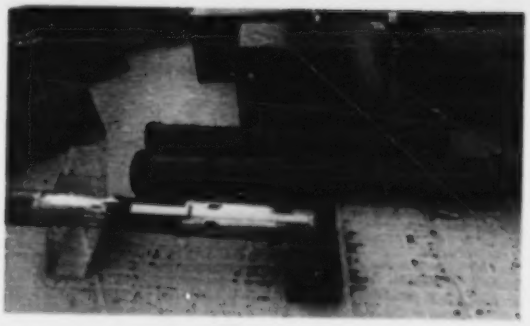
[107] Confidential source.
[108] Hoplite Report. *Ansar-al-Sharia with RPG-32 rocket launcher in Yemen.* Armament Research Services (ARES). 30 March 2016. http://armamentresearch.com/tag/hashim/.

Annex 35: Images of maritime seizures

A. FV Nasir (25 Sep 2015)[109]

Figure 35.1
9M113 Konkurs ATGW

Figure 35.2
9M113 Konkurs ATGW



B. FV Samer (27 Feb 2016)[110]

Figure 35.3
SA93 Assault Rifle

Figure 35.4
Type 56 variant Assault Rifle

Figure 35.5
RPG 7 variant

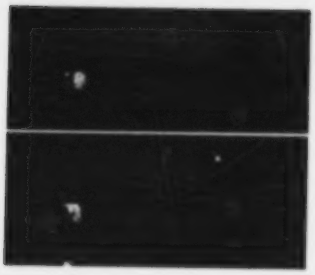


Figure 35.6
AIM Assault Rifle

[109] Imagery from Government of Australia.
[110] Ibid.

Figure 35.7
AKM Assault Rifle

Figure 35.8
PKM Machine Gun

C. Unnamed dhow (20 Mar 2016)[111]

Figure 35.10
AKM variant Assault Rifle

Figure 35.11
Dragunov variant Sniper Rifle

Figure 35.12
9M133 Kornet or Dehlayvah variant ATGW

D. FV Adris (28 Mar 2016)

No images as yet supplied by the US Government.

[111] Images from confidential sources.

Annex 36: Land route smuggling seizures

A. Weapon types in Houthi possession

Weapons that were known to be not part of the Yemen national stockpile,[112] or on issue to the Yemen Armed Forces at the onset of conflict, have been identified as being used by the Houthis. The Panel considers that those weapons summarised in Table 36.1 originated in Iran, but as yet has no details of the supply chain used. (See annex 38 for further details).

Table 36.1
Summary of Iranian origin weapons types

Weapon Type	*Original Supplier to Iran*[113]	*Result of tracing request*
Type 73 General Purpose Machine Gun	DPRK[114]	No response to Panel enquiry.[115]
AM-50 anti-material rifle (AMR)[116]	Iran manufacture	No response to Panel enquiry.[117]

B. Seizure of smuggled weapons in transit to Houthi-Saleh alliance controlled areas

The Panel has identified a range of weapons (table 36.2) seized, mostly on Omani registered vehicles that on traffic routes leading to Houthi-Saleh alliance controlled territory. The Panel considers that the weapons were destined for Houthi or Saleh forces, as there would be no other credible end user in their respective territory.

Table 36.2
Summary of seizures of smuggled weapons in transit to Houthi-Saleh alliance controlled areas

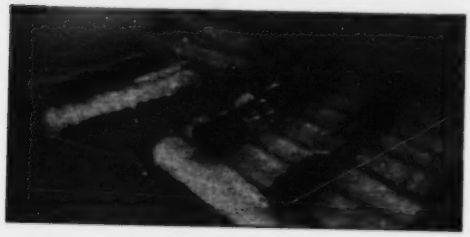
Date	*Location*	*Seizure*	*Vehicle registration*
19 Jul 2015	Thamoud, Hadramawt	36 vehicle radios 360 personal radios	Yemeni plate 590/11
Sep 2016	Safgir, Ma'rib	RPG 27 variant[118]	
18 Sep 2016	Ma'rib	Ammunition type not known	Omani licence plates
28 Sep 2016	Ma'rib	ATGW and 122mm FFR	Omani licence plates
8 Oct 2016	Lahj	Ammunition type not known	
18 Oct 2016	Shehn, Ma'rib	24+ x ATGW	

[112] Sources: 1) Janes' Weapons; 2) Janes' Military: 3) UN Conventional Arms Register; 4) SIPRI Annual Military Expenditure reports.
[113] The Panel is not implying that for this enquiry any of these Member States have acted in violation of the targeted arms embargo on Yemen imposed by resolution 2216 (2015). The Panel's tracing requests were aimed at better understanding how weapons are being smuggled into Yemen for the benefit of individuals listed by the Security Council Committee established pursuant to resolution 2140 (2014) or by other individuals subject to the targeted arms embargo.
[114] Democratic Peoples Republic of Korea.
[115] Panel requests to Permanent Mission of DPRK of 23 May and 8 July 2016.
[116] This weapon is an unlicensed copy of the Austrian Steyr HS 12.7mm AMR. Steyr supplied 800 weapons to Iran in 2005, after which unlicensed copies began to be manufactured by Defence Industries of Iran (DIO). The weapon has been positively identified as an AM50 as opposed to a Steyr by the unfluted barrel.
[117] Panel requests to the Permanent Mission of the Islamic Republic of Iran of 23 May, 8 July and 2 November 2016.
[118] Member State confirmed seizure on 28 November 2016.

Figure 36.1
RPG-27, Ma'rib (Sep 2016)

Figure 36.2
***'Kornet' or 'Dehlayvak'*, Ma'rib (28 Sep 2016)**

Figure 36.3
Shehn, Ma'rib seizure (18 Oct 2016) – TBC



C. Concealment in transit

Weapon shipments on the land main supply routes identified by the Panel are now well concealed in an attempt to avoid detection. Hidden compartments are being engineered in to the structure of the trailer (see figures 36.4 to 36.6), whilst other simpler concealment methods involve the use of livestock (see figure 36.8). The time taken to load such vehicles suggests that the weapons would more likely be loaded prior to the goods been used to disguise them; this avoids double handling and reduces detection risks.

Figure 36.4
Shehn, Ma'rib (18 Oct 2016)

Figure 36.5
Shehn, Ma'rib (18 Oct 2016)

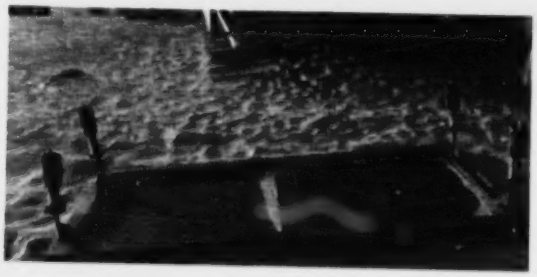
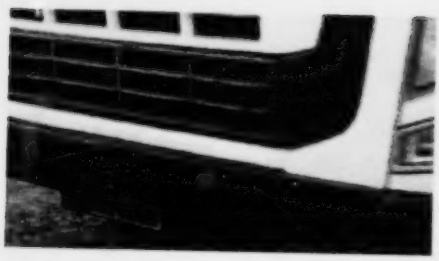


Figure 36.6
Shehn, Ma'rib (18 Oct 2016)

Figure 36.7
Shehn, Ma'rib (18 Oct 2016)



Annex 37: Use or seizures of ATGW

A. 9M113 '*Konkurs*' or '*Tosan*' ATGW

The Panel has investigated seizures of, and identified the use, of Russian manufactured 9M113 '*Konkurs*' or Iranian manufactured copies, the '*Tosan*' ATGW as shown in the following imagery.

Figure 37.1
Jizan use (25 Aug 2015) – '*Konkurs* or *Tosan*'[119]

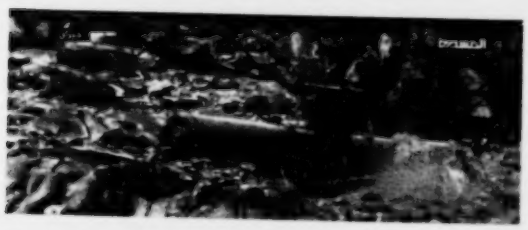


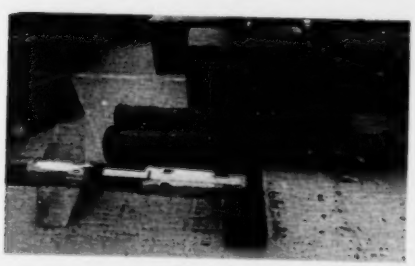
Figure 37.2
FV Nasir seizure (24 Sep 2015) – '*Konkurs*' (Centre Ground)

Figure 37.3
Jizan use (11 Dec 2015) – '*Konkurs* or *Tosan*'[120]

B. *Toophan*' ATGW

The Panel has investigated the seizures of an Iranian manufactured '*Toophan*' ATGW as shown in the following imagery. This is a copy of the US TOW system.

Figure 37.4
FV Nasir seizure (24 Sep 2015) – '*Toophan*' (Foreground)



[119] Source: https://www.youtube.com/watch?v=R_RUgRtpUKc.
[120] Source: 151211 VID-16151211-WA0029 1-29.

C. 9M133 '*Kornet*' or '*Dehlavyah*' ATGW

The Panel has investigated seizures, or identified the use, of Russian manufactured 9M122 '*Kornet*' or Iranian manufactured copies, the '*Dehlavyah*' ATGW as shown in the following imagery.

Figure 37.5
Ta'izz seizure (29 Nov 2015) – *'Kornet'* or *'Dehlavyah'*

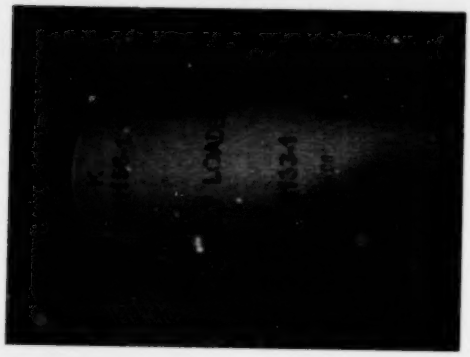


Figure 37.6
FV No Name seizure (20 Mar 2016) – *'Kornet'* or *'Dehlavyah'*

Figure 37.7
Ma'rib seizure (28 Sep 2016) – *'Kornet'* or *'Dehlavyah'*

Figure 37.8
Shehn, Ma'rib seizure (18 Oct 2016) – TBC

Annex 38: Weapons of Iranian origin in Houthi use

A. Type 73 General Purpose Machine Gun

1. The Panel has identified from imagery a weapon with characteristics similar to the Democratic Peoples Republic of Korea (DPKR) manufactured Type 73 General Purpose Machine Gun (GPMG) being used by Houthi fighters in Yemen.

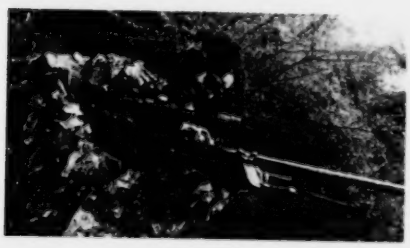
2. The Type 73 GPMG is a relatively rare weapon outside the manufacturing country. Only Iran is known to have received exports of the weapon (in the 1970s and 1980s). Since then the weapon has been observed in the possession of the Iraqi Shi'a militias (Badr Brigade forces), the al-Imam Ali Brigade and the Christian Babylon Brigades. The Type 73 has also been documented in the hands of the Syrian Arab Army operating near Palmyra, Syria.[121]

Figure 38.1
Type 63 GPMG with Houthi fighter[122]

B. AM-50 Anti Material Rifle

2. The Panel has observed footage of an Iranian manufactured AM-50 anti-material rifle (AMR)[123] being used by Houthi fighters in Yemen.

Figure 38.2
AM50 AMR with Houthi fighter[124]

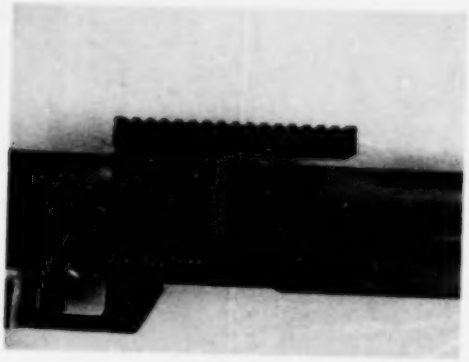


[121] http://armamentresearch.com/2016/03/.
[122] Ibid.
[123] This weapon is an unlicensed copy of the Austrian Steyr HS 12.7mm AMR. Steyr supplied 800 weapons to Iran in 2005, after which unlicensed copies began to be manufactured by Defence Industries of Iran (DIO). The weapon has been positively identified as an AM50 as opposed to a Steyr by the unfluted barrel.
[124] ARES Hoplite. http://armamentresearch.com/iranian-am50-anti-materiel-rifle-documented-in-yemen/.

3. A further example of an AM-50 AMR in Houthi hands was provided by a Member State[125] (figures 38.3 and 38.4).

Figure 38.3
Captured AM50 AMR (Serial 2200076)

Figure 38.4
Captured AM50 AMR (Serial 2200076)



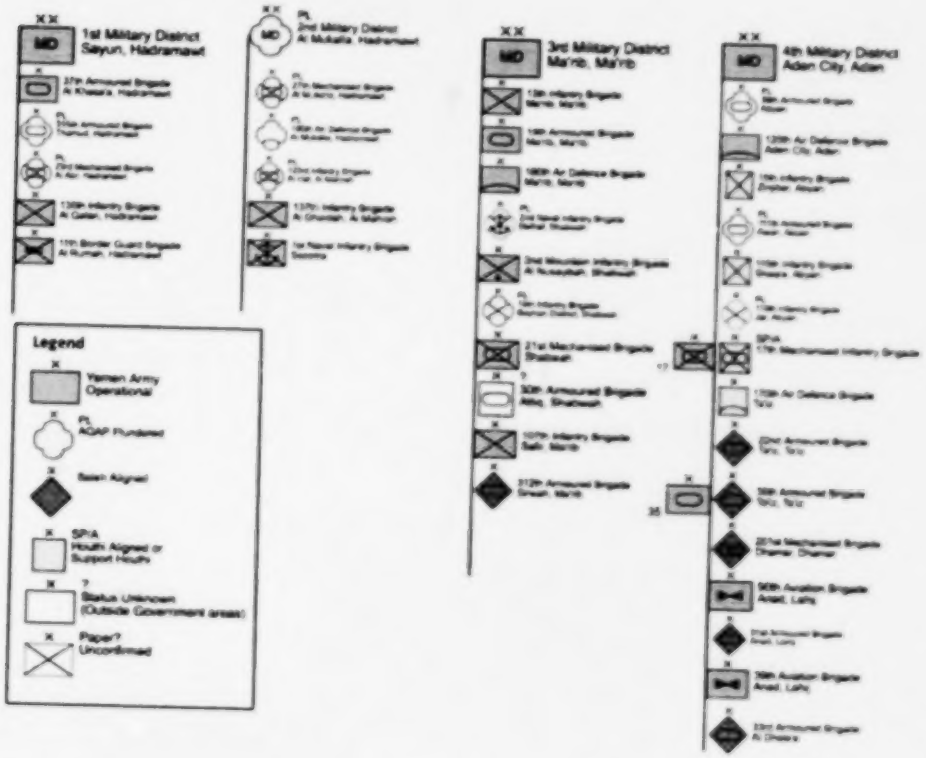
4. Although these weapons are undoubtedly of Iranian origin, the Panel has no evidence to date that they have been supplied post the imposition of the arms embargo on 14 April 2015. Tracing requests were submitted to Iran[126] and responses are still awaited.

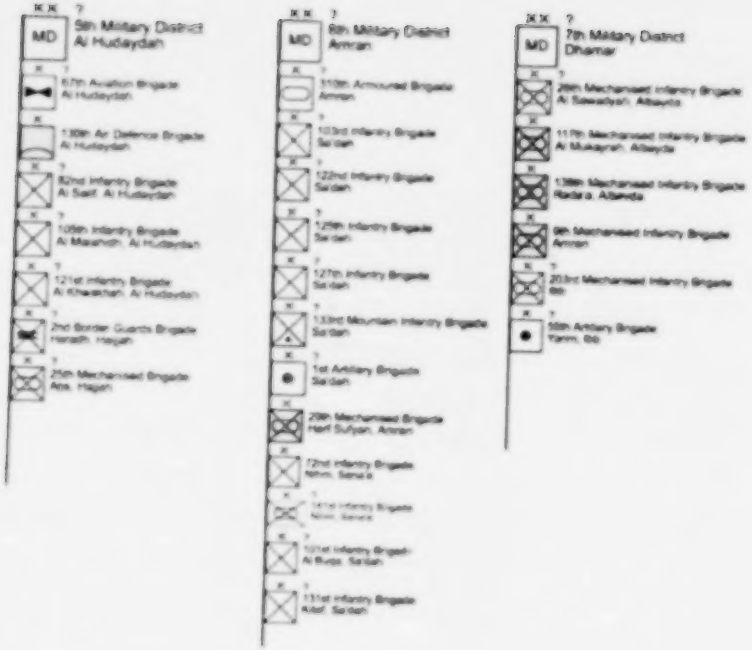
[125] Confidential source.

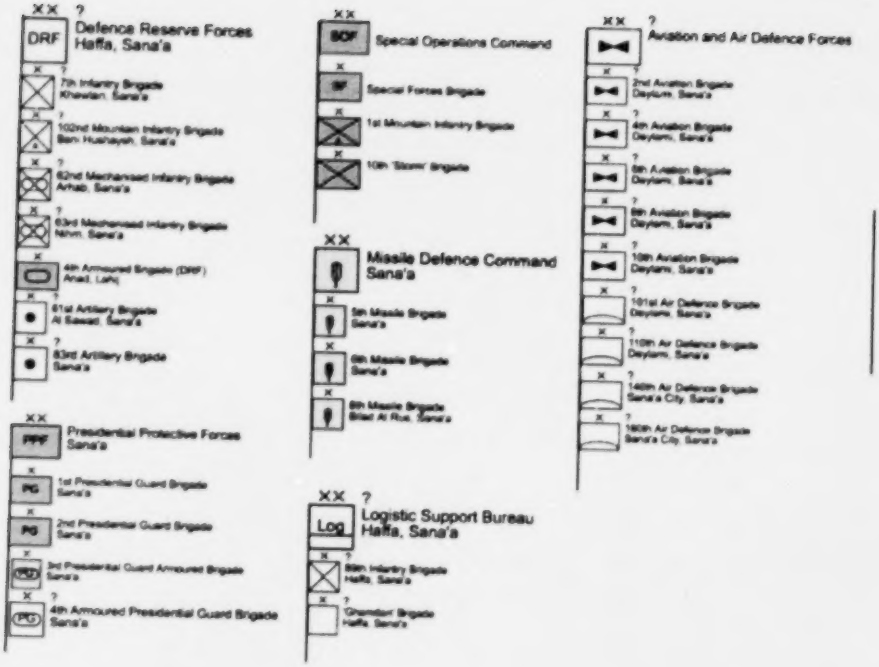
[126] Panel letters to Permanent Mission of Iran of 11 May, 8 July and 2 November 2016. Panel letters to Permanent Mission of DPRK of 23 May and 8 July 2016.

Annex 39: Possible ORBAT of Yemen Army (as at 30 June 2016) and summary of status of military units

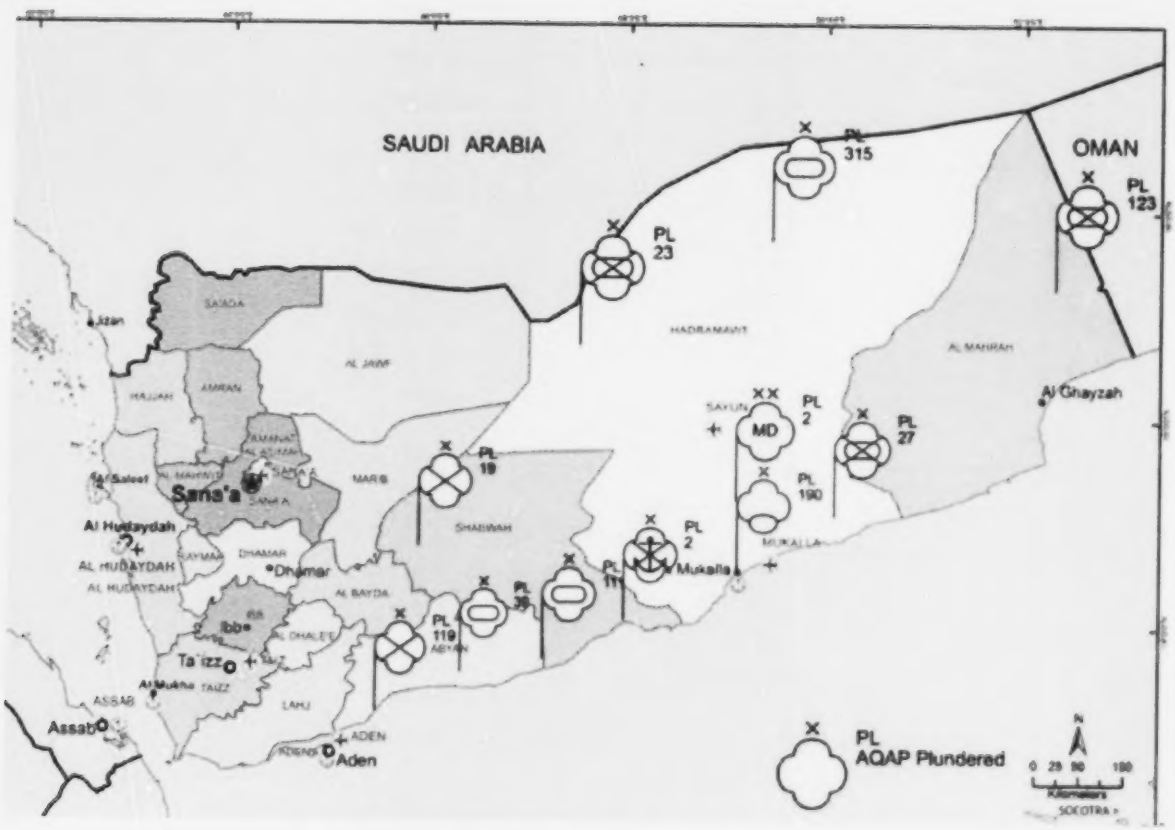
A. Military unites by Military District and location



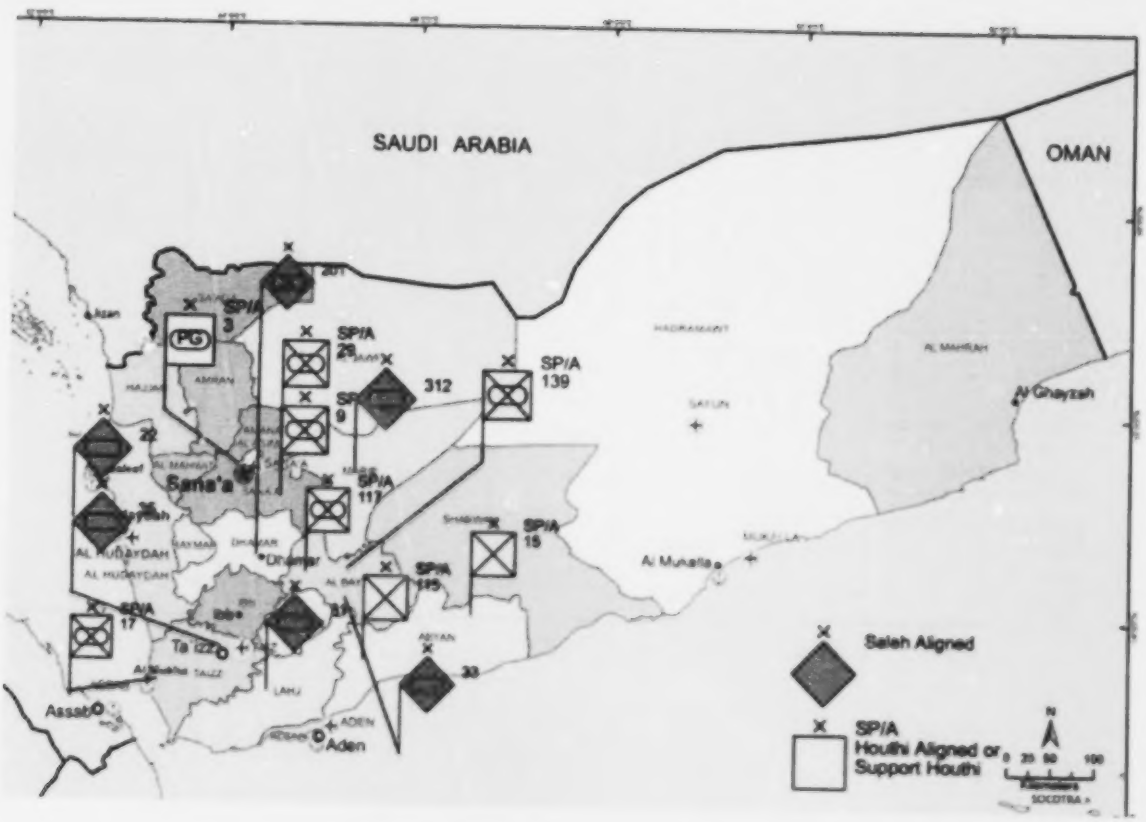

MD
5th Military District
Al Hudaydah
67th Aviation Brigade
Al Hudaydah
130th Air Defence Brigade
Al Hudaydah
82nd Infantry Brigade
Al Saif, Al Hudaydah
105th Infantry Brigade
Al Maahidh, Al Hudaydah
121st Infantry Brigade
Al Khawkhah, Al Hudaydah
2nd Border Guards Brigade
Haradh, Hajjah
25th Mechanised Brigade
Abs, Hajjah
MD
8th Military District
Amran
310th Armoured Brigade
Amran
103rd Infantry Brigade
Sa'dah
122nd Infantry Brigade
Sa'dah
125th Infantry Brigade
Sa'dah
127th Infantry Brigade
Sa'dah
133rd Mountain Infantry Brigade
Sa'dah
1st Artillery Brigade
Sa'dah
29th Mechanised Brigade
Harf Sufyan, Amran
72nd Infantry Brigade
Nihm, Sana'a
Al Rass, Sa'dah
131st Infantry Brigade
Kitaf, Sa'dah
MD
7th Military District
Dhamar
29th Mechanised Infantry Brigade
Al Sawadiyah, Albayda
117th Mechanised Infantry Brigade
Al Mukaynah, Albayda
138th Mechanised Infantry Brigade
Radda, Albayda
9th Mechanised Infantry Brigade
Amran
203rd Mechanised Infantry Brigade
Ibb
55th Artillery Brigade
Yarim, Ibb


DRF
Defence Reserve Forces
Hafia, Sana'a
7th Infantry Brigade
Khawlan, Sana'a
102nd Mountain Infantry Brigade
Bani Hushaysh, Sana'a
62nd Mechanised Infantry Brigade
Arhab, Sana'a
63rd Mechanised Infantry Brigade
Nihm, Sana'a
4th Armoured Brigade (DRF)
Anad, Lahj
61st Artillery Brigade
Al Sawad, Sana'a
63rd Artillery Brigade
Sana'a
PPF
Presidential Protective Forces
Sana'a
1st Presidential Guard Brigade
Sana'a
2nd Presidential Guard Brigade
Sana'a
3rd Presidential Guard Armoured Brigade
Sana'a
4th Armoured Presidential Guard Brigade
Sana'a
SOF
Special Operations Command
Special Forces Brigade
1st Mountain Infantry Brigade
10th 'Storm' Brigade
Missile Defence Command
Sana'a
5th Missile Brigade
Sana'a
6th Missile Brigade
Sana'a
8th Missile Brigade
Bilad Al Rus, Sana'a
Log
Logistic Support Bureau
Hafia, Sana'a
80th Infantry Brigade
Hafia, Sana'a
Ghamdan Brigade
Hafia, Sana'a
Aviation and Air Defence Forces
2nd Aviation Brigade
Daylami, Sana'a
4th Aviation Brigade
Daylami, Sana'a
8th Aviation Brigade
Daylami, Sana'a
9th Aviation Brigade
Daylami, Sana'a
10th Aviation Brigade
Daylami, Sana'a
101st Air Defence Brigade
Daylami, Sana'a
110th Air Defence Brigade
Daylami, Sana'a
140th Air Defence Brigade
Sana'a City, Sana'a
160th Air Defence Brigade
Sana'a City, Sana'a

B. AQAP plundered units



C. AQAP/Houthi plundered units



D. Summary of status of Yemen Armed Force units [127]

Ser	Probable Status	Unit Type and Quantity															
		HQ Military District	Mountain Infantry Brigade	Naval Infantry Brigade	Presidential Guard Brigade	Presidential Guard Brigade Armoured	Border Guard Brigade	Armoured Brigade	Mechanized Brigade	Mechanized Infantry Brigade	Infantry Brigade	Special Forces Brigade	Storm Brigade	Artillery Brigade	Missile Brigade	Air Defence Brigade	Aviation Brigade
1	Operational	3	2	1	2		1	3.5	1	0.5	4	1	1			2	2
2	Non-operational (equipment plundered by Houthi)	1	1	1				3	2	0	4					1	
	Non-operational (equipment plundered by AQAP)																
3	Fighting for Houthi-Saleh Alliance					1		4.5	2	3.5	2				3	2	
4	Not Known	3				1	1	2	1	4	12			4		4	5
5	TOTALS	7	3	2	2	2	2	15	6	8	22	1	1	4	3	9	8

[127] The brigades 'loyal' to both sides are allocated as 0.5.

E. Summary of units[128] aligned to Saleh, Houthi or plundered by Houthi or AQAP

Probable Status	*Unit Type and Quantity*									
	HQ Military District	*Presidential Guard Brigade*	*Mountain Infantry Brigade*	*Naval Infantry Brigade*	*Armoured Brigade*	*Mechanised Brigade*	*Mechanised Infantry Brigade*	*Infantry Brigade*	*Artillery Brigade*	*Missile Brigade*
Saleh aligned					4	1				
Houthi Aligned		1				1	3	2		
Houthi Plundered							1			
AQAP Plundered	1			1	3	2		3		3
TOTALS	1	1		1	7	4	4	5		3

[128] This includes the units loyal to both sides.

Annex 40: Summary of black market small arms ammunition prices

Figure 40.1
Graph of Black Market prices (Yemen) (2015 – 2016)

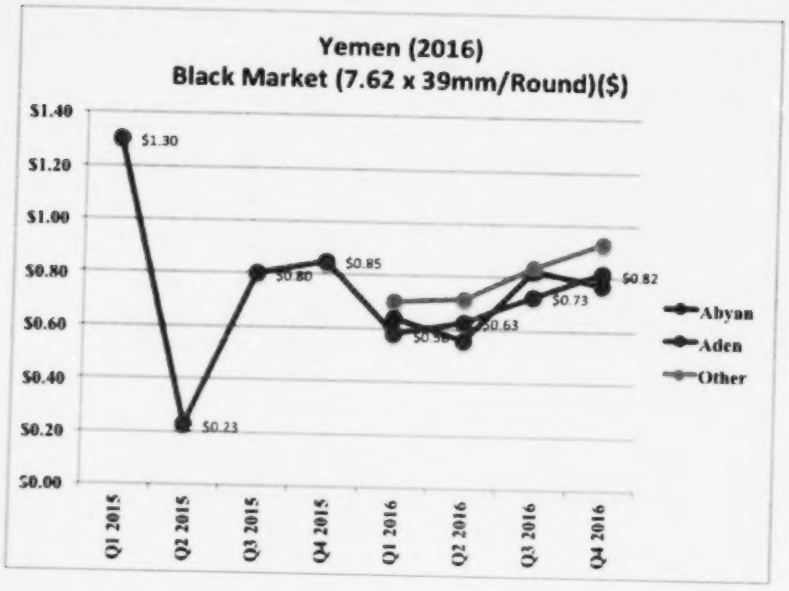


Figure 40.2
Graph of Black Market prices (Aden) (2016)

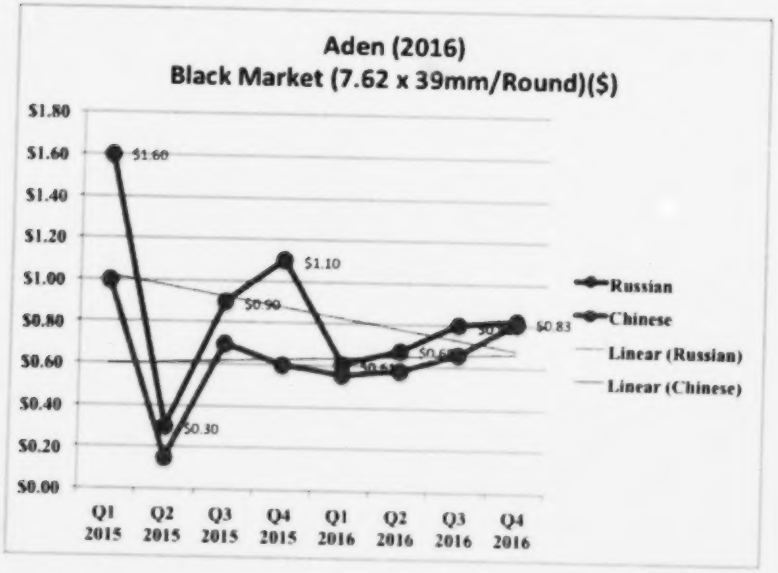


Figure 40.3
Graph of Black Market prices (Abyan) (2016)

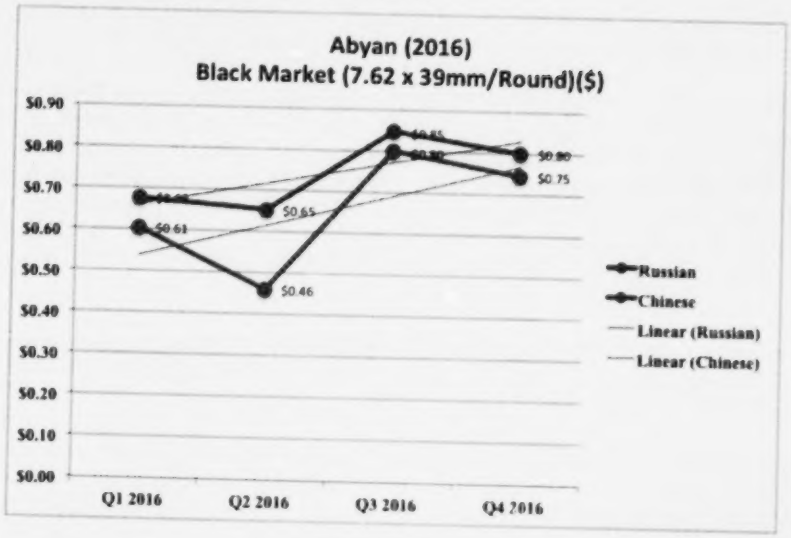
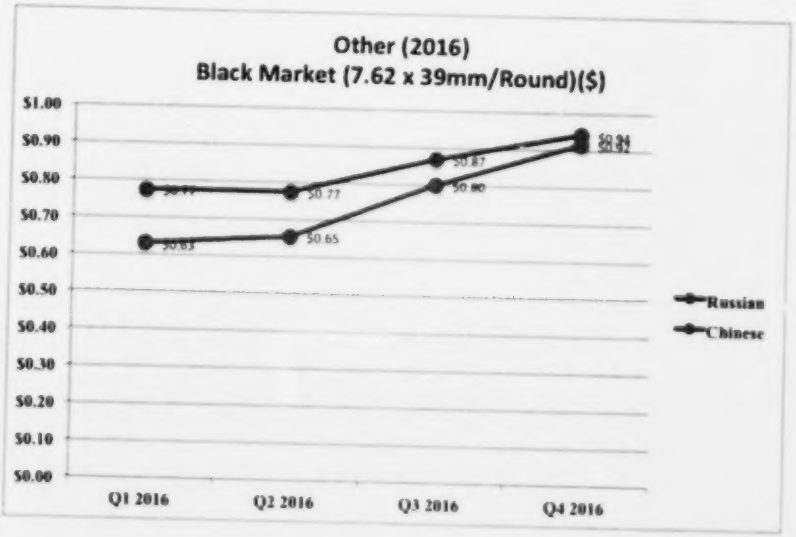


Figure 40.4
Graph of Black Market prices (Other) (2016)



Annex 41: Transfer of Taurus pistols and revolvers

1. The Panel was provided with initial information[129] about this arms transfer, and the subsequent investigation has resulted in the Panel obtaining evidence from authorities, organizations or individuals in six countries to date.

2. Negotiations for the sale of 8,000 pistols by Forjas Taurus S.A of Brazil to, supposedly, the Ministry of Defence of Djibouti began before November 2012, when the Chief of the Military Cabinet of the Presidency initially issued an end use certificate.[130] The Brazilian authorities issued an initial export licence in October 2013, after which funds were transferred to pay for the weapons. The final Brazilian export licences were issued by February 2015.[131] Resolution 2216 (2015) of 14 April 2015 imposed the arms embargo on designated individuals, which is before these weapons were physically shipped on 3 July 2015. Had Taurus Forjas S.A exercised due diligence then they would have identified aspects of this arms purchase that were suspicious in relation to the targeted arms embargo on Yemen (see below), and could have stopped the shipment.

3. The Mediterranean Shipping Company S.A acted as the shipper for 3,000 of the above 8,000 Taurus pistols and revolvers, loaded in Container Number TTNU3603161 on the MV MSC Cadiz (IMO 9480203), which sailed from Santos, Brazil (BRSSZ) on 3 July 2015 destined for Djibouti.

4. On, or about, 24 July 2015 the port authorities of Gioia Tauro, Italy (ITGIT) discovered 3,000 Taurus Pistols in Container Number TTNU3603161. The Italian authorities delayed the onward movement of this ISO-container, as the transit of the cargo had not been notified to the appropriate Italian authorities. Once this issue had been resolved, Container Number TTNU3603161 then departed Gioia Tauro on 27 October 2015, loaded on the MV MSC Savona (IMO 9460356), bound for King Abdullah Port, Saudi Arabia (SAKAC). The Saudi Arabian authorities then seized the shipment under the authority of 'High Decision 51145/2015 of the Council of Political and Security Affairs' as they suspected that the shipment was actually bound for the Houthis via Itkan Assaid Al Mahdouda (Precise Fishing Limited, Djibouti).[132] Saudi Arabia failed to report this seizure to the Committee as required by paragraph 17 of resolution 2216 (2015).

5. Subsequent investigation by the Panel established that the company actually used for the purchase from Taurus was the Itkan Corporation for General Trading, Yemen (Itkan), owned by Adeeb Mana'a,[133] a son of a designated individual Fares Mohammed Hassan Mana'a (SOi.008).[134] Fares Mohammed Hassan Mana'a is a close associate of Ali Abdullah Saleh (YEi.003),[135] and a known arms trafficker who was listed by the Security Council Committee pursuant to resolutions 751 (1992) and 1907 (2009) concerning Somalia and Eritrea for directly or indirectly supplying, selling or transferring arms or related material to Somalia in violation of the arms embargo. On 26 March 2011 Fares Mohammed Hassan Mana'a was appointed by Abdulmalik al-Houthi and the Houthi political leadership as the as the Governor of

[129] Confidential source.

[130] All documentary evidence and references for this section are contained within the timeline at appendix A.

[131] Detailed timeline is at appendix A.

[132] The smuggling of Taurus Pistols to Yemen via Djibouti may have precedence. In October 2013 8,000 Taurus weapons were allegedly sent to Al Sharq Fishing and Fish. The shipment was arranged by a designated individual Fares Mohammed Hassan Mana'a (SOi.008) (see paragraph 75 to the Panel's final report S/2016/73 and following footnote). This allegation is the subject of an ongoing court case in Porto Alegre, Brazil against two former employees of Taurus (Eduardo Pezzuol and Leonardo Sperry). The Prosecutors have not charged the company itself. (Sources: Reuters, 5 September 2016, and confidential source in Brazil).

[133] Although the Taurus internal Purchase Check List names Hussain Said Khaireh, Director General of Security, Djibouti first, on the same line it also includes Adeeb Mana'a, with a Yemeni E-mail and telephone number.

[134] Listed under authority of paragraph 8 to resolution 1844 (2008) on 12 April 2010 by the Security Council Committee pursuant to resolutions 751 (1992) and 1907 (2009) concerning Somalia and Eritrea.

[135] He was the Head of Ali Abdullah Saleh's 'presidential committee' until late January 2010, when Yemeni authorities arrested him.

Sa'dah,[136] a post he held until December 2014. He is currently a minister in the new '28 November government' of the Houthi-Salah alliance.

6. The Panel identified a number of indicators that are inconsistent with this particular arms transfer being a legitimate arms transfer to the Government of Djibouti:

(a) An end user certificate was issued to support the transfer of 80,000 pistols to the Djibouti Ministry of Defence, yet the Djiboutian Armed Forces, which includes the National Gendarmerie, only consists of 16,000 active personnel and 9,500 reservists.[137] This is an unusually high number of weapons for such a force level;

(b) The end user certificate authorised the Matrix company, headed by Abddurabuhguhqd Sale Abdo, to import the weapons. Neither the name of this company, nor its head, appear on any other documentation (shipping, financial or legal) relating to this arms transfer. All the relevant documentation refers to the Itkan company and Adeeb Mana'a;

(c) The address used for the Itkan company, Trading Avenue, Djibouti, could not be found in Djibouti. A request to the Government of Djibouti for the registered details of both the Matrix and Itkan companies and their associated bank accounts, has not yet been responded to.[138] The Government of Djibouti did respond to a previous enquiry from the Panel and confirmed the validity of the end use certification;[139]

(d) On 21 January 2015 Fares Mohammed Hassan Mana'a (SOi.008) entered Brazil at the invitation of Eduardo Pezzuol of Forjas Taurus S.A in relation to arms purchases.[140] This visit is also a violation of paragraph 1 of resolution 1844 (2008) and details have been passed to the Somalia and Eritrea Monitoring Group (SEMG) for their consideration;

(e) There is no logical or reasonable reason that the Government of Djibouti would need to use a Yemeni broker for the supply of weapons to their armed forces. Particularly a broker with close family ties to a designated individual; and

(f) There were unexplained inconsistencies in the detail and dates of the Bill of Lading and the end use certification for this arms transfer (see appendix A for details).

7. The detailed timeline for this arms transfer is at appendix A together with the references of all relevant documentation in the possession of the Panel.

8. The Panel finds it unlikely that this arms transfer was destined for Houthi-Saleh forces due to the types of weapons involved. Pistols and revolvers are personal protection type weapons, which are not generally used in combat. They are very attractive though to the black market in Yemen and elsewhere, where individuals can buy unlicensed weapons for self-protection. They are also ideal for using in criminal acts such as the protection of drug traffickers or armed holdups of banks etc as they are easily concealable.

9. The involvement of Fares Mohammed Hassan Mana'a (SOi.008) and his known relationship to the Houthis makes it possible that the financial aspects of the transfers may have been to the benefit of listed individuals, and the Panel will continue to investigate this aspect.

---

[136] http://yemenpost.net/Detail123456789.aspx?ID=3&SubID=3336.

[137] Force level data from https://janes.ihs.com/Janes/Display/1319215 and others.

[138] Panel letter to the Permanent Mission of 14 October 2016.

[139] Letter from the Permanent Mission of 26 September 2016.

[140] Confidential sources. The Federal Court of Brazil has issued a legal notice of proceedings against this individual for this action (Notice 710002418415, Criminal Action: 5033103-42.2015.4.04.7100/RS).

10. The modus operandi of the transfer, using his son Adeeb Mana'a and a Djibouti end user, was designed to circumvent normal security and customs controls. The transfer was only prevented by the diligence of the Saudi Arabian authorities.

Appendix A to Annex 41: Timeline of Forjas Taurus S.A. (Brazil) export of pistols and revolvers

Table 41.A.1
Transfer timelines

Date	*Activity*	*Reference*[141]	*Responsible*	*Remarks*
3 Nov 2012	EUC issued for 80,000 (Eighty Thousand) pistols and revolvers	123/PRE/CMPR	Chief of the Military Cabinet, Djibouti	
4 Nov 2012	EUC issued for 80,000 pistols and revolvers	123/PRE/CMPR	Chief of the Military Cabinet, Djibouti	Correction of calibre of one weapon type. Specifies import agent as Abddurabuhguhad Sale Abdo of Matrix company. Expired 31 Dec 13
14 Oct 2013	Brazilian Export Licence issued for 1,000 Taurus PT 24/7 G2 9mm 17t Tenox Pistols	788/2013-October	MOD Brazil	MOD Brazil export process 200.414.2013 Expired before shipment
14 Oct 2013	Brazilian Export Licence issued for 1,000 Taurus PT 24/7 G2 9mm 17t Individual Pistols	788/2013-October	MOD Brazil	MOD Brazil export process 200.414.2013 Expired before shipment
14 Oct 2013	Brazilian Export Licence issued for 500 Taurus PT 24/7 G2 Compact 9mm 17t Tenox Pistols	788/2013-October	MOD Brazil	MOD Brazil export process 200.414.2013 Expired before shipment
14 Oct 2013	Brazilian Export Licence issued for 500 Taurus PT 24/7 G2 Compact 9mm 17t Individual Pistols	788/2013-October	MOD Brazil	MOD Brazil export process 200.414.2013 Expired before shipment
14 Oct 2013	Brazilian Export Licence issued for 2,000 Taurus Model 85s 0.38" SPL Revolvers	788/2013-October	MOD Brazil	MOD Brazil export process 200.414.2013 Broker named as Adeeb Mana'a, Itkhan Company for Hunting Expired before shipment
14 Oct 2013	Initial Brazilian Export Licence issued for 1,000 Taurus Model 939 0.22" LR Revolvers	788/2013-October	MOD Brazil	MOD Brazil export process 200.414.2013 Broker named as Adeeb Mana'a, Itkhan Company for Hunting Expired before shipment

[141] Copies of all referenced documents are in the possession of the Panel and available for inspection by Member States on request.

Date	*Activity*	*Reference*	*Responsible*	*Remarks*
18 Nov 2013	US$ 45,960 transferred from International Commercial Bank Djibouti (Account: 000010200451761) to Citibank, New York (Account 36942067)		Itkhan Corporation	Origin bank account in name of Itkhan Corporation for General Trading and Hunting, Trading Avenue, Djibouti Receiving bank in name of Forjas Taurus S.A
18 Nov 2013	US$ 247,950 transferred from International Commercial Bank Djibouti (Account: 000010200451761) to Citibank, New York (Account 36942067)		Itkhan Corporation	Origin bank account in name of Itkhan Corporation for General Trading and Hunting, Trading Avenue, Djibouti Receiving bank in name of Forjas Taurus S.A
3 Dec 2013	US$ 249,950 transferred from international Commercial Bank Djibouti (Account: 000010200451761) to Citibank, New York (Account 36942067)		Itkhan Corporation	Origin bank account in name of Itkhan Corporation for General Trading and Hunting, Trading Avenue, Djibouti Receiving bank in name of Forjas Taurus S.A
23 Dec 2013	Invoice issued by Taurus for 1,000 PT 24/7 G2 9mm CAL17S Pistols (Black Tenifer with additional magazines)	200411	Forjas Taurus S.A.	USD 290,430.60 Made out to Djibouti Ministry of Defence
23 Dec 2013	Invoice issued by Taurus for 1,000 Model 959CH 22L Revolvers	200415	Forjas Taurus S.A.	USD 227,565.00 Made out to Djibouti Ministry of Defence
23 Dec 2013	Invoice issued by Taurus for 1,000 PT 24/7 G2 Compact 9mm 13S Pistols (Black Tenifer and Matt with additional magazines)	200416	Forjas Taurus S.A.	USD 288,901.85 Made out to Djibouti Ministry of Defence
26 Dec 2013	Brazilian Export Licence issued for 1,000 Taurus Model 939 0.22LR Revolvers	1010/2013-December	MOD Brazil	MOD Brazil export process 200.415.2014
26 Dec 2013	Brazilian Export Licence issued for 2,000 Taurus Rev .85S 0.38: Special Revolvers	1012/2013-December	MOD Brazil	MOD Brazil export process 200.413.2014
26 Dec 2013	Brazilian Export Licence issued for 1,000 Taurus PT 24/7 G2 9mm 17t Carbono Tenox Pistols	1013/2013-December	MOD Brazil	MOD Brazil export process 200.414.2014
26 Dec 2013	Brazilian Export Licence issued for 1,000 Taurus PT 24/7 Pistols	1015/2013-December	MOD Brazil	MOD Brazil export process 200.414.2014

Date	*Activity*	*Reference*	*Responsible*	*Remarks*
Undated	Extension for EUC for 80,000 pistols and revolvers granted	123/PRE/CMPR	Chief of the Military Cabinet, Djibouti	Valid until 31 Dec 15
14 Jan 2014	US$ 144,950 transferred from International Commercial Bank Djibouti (Account: 00001020045176l) to Citibank, New York (Account 36942067)		Itkhan Corporation	Origin bank account in name of Itkhan Corporation for General Trading and Hunting, Trading Avenue, Djibouti Receiving bank in name of Forjas Taurus S.A
13 Mar 2014	34 boxes of weapons leave Brazil on Emirates Airlines air cargo. 1,000 x PT 24/7 G2 9mm CAL 17s Black Tenifer Pistols	Embarkation Certificate 4224 Airway Bill 176 8071 1680	Amazon Logistics	ETA Djibouti 15 Mar 14
13 Mar 2014	34 boxes of weapons leave Brazil on Emirates Airlines air cargo. 1,000 x PT 24/7 G2 9mm CAL 17s Black Tenifer Pistols	Embarkation Certificate 4224 Airway Bill 176 0343 3210	Amazon Logistics	ETA Djibouti 15 Mar 14
16 Apr 2014	34 boxes of weapons leave Brazil on Emirates Airlines air cargo. 1,000 x PT 24/7 Pistols	Embarkation Certificate 4272	Amazon Logistics	ETA Djibouti 22 Apr 14
21 Jan 2015	Fares Mohamed Hassan Mana'a (SO).008) enters Brazil at invitation of Eduardo Pezzuol of Forjas Taurus S.A.	Confidential source		Referred to the 751(1992) Committee Monitoring Group as a potential violation of a travel ban.
28 Jan 2015	Brazilian Export Licence issued for 2,000 Taurus Model 85s 0.38" Pistols (Serial Numbers GZ75481 to GZ77480)	040/2015-January	MOD Brazil	MOD Brazil export process 200.414.2013 Replaced 14 Oct 13 export authority
27 Feb 2015	Brazilian Export Licence issued for 1,000 Taurus Model 939 0.22" Pistols (Serial Numbers GZ72481 to GZ73480)	072/2015-February	MOD Brazil	MOD Brazil export process 200.414.2013 Replaced 14 Oct 13 export authority
27 Jun 2015	Bill of Lading issued for 40 boxes of revolvers for Container TTNU3603361	MSCUZS275155	MSC S A	Issued in Gioia Tauro prior to vessel leaving Brazil
4 Jul 2015	MSC Cadiz (IMO 9480203) departs Santos, Brazil (BRSSZ) with Container TTNU3603161			

Date	*Activity*	*Reference*	*Responsible*	*Remarks*
24 Jul 2015	Second Bill of Lading issued for 40 items	MSCUZS275155	Mediterranean Shipping do Brazil	Retrospectively by MSC Brazilian Agent For 1 x 20' ISO – No mention of weapons
24 Jul 2015	MSC Cadiz offloads Container TTNU3603161 in Port Gioia Tauro, Italy (ITGIT)		Italian Customs	
25 Jul 2015	Italian Customs Agency and Guardia Finanzia confiscate Container TTNU3603161 pending investigation	Criminal procedure 2249/2015 mod.21	Italian Customs	Transit of weapons had not been notified to the competent agency
9 Oct 2015	Djibouti MOD declaration to Italian Customs that the shipment is for MOD Djibouti		Chief of the Military Cabinet	
27 Oct 2015	MSC Savana (IMO 9460356) departs Port Gioia Tauro, Italy with Container TTNU3603161		MSC	
1 Nov 2015	MSC Savana arrives Port King Abdullah, Saudi Arabia (SAKAC)		MSC	
1 Nov 2015	Saudi authorities seize Container TTNU3603161 pending investigation	DG Intelligence High Decision 51145	Saudi Arabia	Weapons remain in Saudi custody
4 Nov 2015	Brazilian authorities seize hardware and documentation from Taurus.		Brazilian Federal Police	
9 May 2016	Federal Court in Brazil issue a legal notice of proceedings against Eduardo Pezzuol and Fares Mohamed Hassan Mana'a (SOi.0°8) 24 Jul 15.	Notice 710002418415 Criminal Action: 5033103-42.2015.4.04.7100/RS	Brazil Federal Court	Case ongoing

Annex 42: Summary of Houthi[142] short-range ballistic missile (SRBM) or free flight rockets (FFR)

A. QAHER-1 FFR

1. Houthi engineers have successfully modified stocks of (S-75''Dvina) (SA-2 'Guideline') Surface to Air (SAM) missiles, converting them into a rudimentary, improvised long range FFR.[143] The Panel considers that two factors determined this activity:

(a) The stockpile[144] of SCUD-B and SCUD-C variant (HWASONG-6) SRBM captured by the Houthi around Sana'a was relatively small. It could soon be used up, or destroyed by retaliatory Saudi Arabia-led coalition air strikes; and

(b) The Houthi realized that the S-75 SAM systems were ineffective against the advanced aircraft of the Saudi Arabia-led coalition air forces and could be converted for surface-to-surface use as FFR.[145]

2. The standard guidance system fitted to the S-75 consists of a ground based tracking radar and radio guidance system, which sends radio signals to the guidance computer on the missile. The guidance computer then sends the necessary adjustments to the guidance surfaces (fins), which then move to alter the course of the missile towards the aerial target. It is highly unlikely that this guidance system has been modified for use in a surface-to-surface role or that a new guidance system has been fitted. The missile is almost certainly being used as a FFR, and the accuracy thus been totally dependent on ballistic calculations, launch parameters and meteorological effects.

3. The ranges of free flight rockets are calculated from complex ballistic equations, combined with extensive test and evaluation to develop a set of range tables. The Panel has seen no evidence that the Houthis have undertaken such research, and thus it must be considered that the accuracy of the QAHER-1 system will be inherently very poor from just the design perspective.

B. SCUD-B SRBM

4. The Panel has confirmed that Yemen was supplied with an unknown quantity of SCUD-B and at least 90 HWASONG-5 (a SCUD-B) copy.[146] There have been no claimed 'SCUD' attacks since 9 October 2016. The Panel will continue to monitor the 'SCUD' threat.

C. Houthi 'ZELZAL-3' SRBM

5. The Houthis have claimed to have designed and manufactured a missile they refer to as the ZELZAL-3 ("earthquake") missile.[147] The Houthis claim this missile is 6m in length, 1,300kg mass and has a range of up to 65km. If this data is correct, then such a missile would have performance characteristics similar to the battlefield free flight rocket the OTR-21 Tochka, known to be in service in Yemen. It would not have the range to threaten the Saudi Arabian cities that the Houthis have claimed to have struck with ZELZAL-3 missiles.

---

[142] Although a Houthi-Saleh military alliance, it is only the Houthi component that has claimed responsibility for any missile or rocket attacks. Hence this annex refers to Houthi armed groups only.

[143] They can not be considered as SRBM, as they have no guidance system and their range is less than the 300km to 1,000 km required to be considered a ballistic missile.

[144] The stockpile also included an unknown number of OTR-21 Tochka (NATO SS-21 Scarab) tactical ballistic missiles. As these only have a range of 70km – 185km they do not have the range to attack Saudi Arabia from the Sana'a area. They have been used to attack Saudi-Arabia-led coalition forces within Yemen.

[145] http://www.tasnimnews.com/en/news/2015/12/22/950631/yemen-adapts-surface-to-air-missile-to-hit-ground-targets.

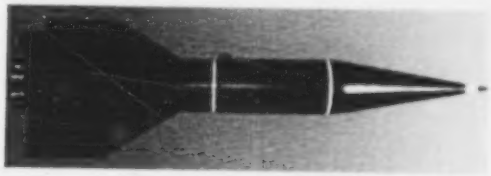
[146] Source: Jane's Defence databases.

[147] Al Masdar Online of 11 July 2016 and others.

6. The imagery released by the Houthis though (figure 42.1) does not correlate to their claims in terms of even dimensions. Photogrammetry suggests that the missile in figure 42.1 is no longer than 3m and is similar in design to the 333mm Iranian designed and manufactured Shahin 1 heavy artillery rocket system (HARS) (figure 42.2), which has not been reported as ever exported.

Figure 42.1
Houthi released image of ZELZAL-3[148]

Figure 42.2
Image of Shahin 1[149]



7. Further analysis of other imagery of this rocket suggests that it is a 'mock up' only as there are no indications of any nozzle, or fuze being fitted. The fins appear to have been spot welded to the missile main body, rather than been free to move to enable flight ballistic adjustments.

8. The Iranian Defence Industries Organization (DIO) produce a FFR system called the ZELZAL-3, which is of a significantly different design to that at figure 42.4. The Panel finds it most likely that the Houthi are using the name ZELZAL-3 for the missile displayed for propaganda purposes only.

D. Iranian ZELZAL-3 SRBM

9. There have been some indicators to suggest that the Houthi claim to have this missile type may have some truth in them:

(a) In a letter to the President of the Security Council (S/2016/786) the Kingdom of Saudi Arabia alleged violations of resolution 2216 (2015) by Iran and demanded that the Council take appropriate and necessary measures against those who have violated the relevant resolutions. These allegations included the use of ZELZAL-3 SRBM on 31 August 2016 against the City of Najran. The Panel requested access[150] to any evidence or imagery the Government of Saudi Arabia may have to support this particular allegation, and to date no response has been received. The allegations were also firmly rejected as being "pure fabrications and unsubstantiated allegations" in a response by the Permanent Representative of Iran to the President of the Security Council (S/2016/187);

[148] Jonothan Azaziah. *All Hail Ansarullah's Ingenuity: Zelzal-3 Ballistic Missile is Crushing Saudi Forces*. Mouqawama. 11 July 2016. http://mouqawamahmusic.net/all-hail-ansarullahs-ingenuity-new-zelzal-3-ballistic-missile-is-crushing-saudi-forces/.
[149] Janes' Weapons.
[150] Panel letter of 3 October 2016.

(b) Missile attacks on Saudi Arabia on 31 August and 4 October were specifically referred to by the Houthis as being by ZELZAL-3 SRBM. Previously they had attributed attacks to either SCUD or QAHER-1.

10. If the Houthis have gained access to ZELZAL-3 then this would likely have been a violation of the targeted arms embargo, as no missile types of this type were known to have been in the pre-conflict stockpile of the Yemeni Armed Forces Missile Brigades.

11. Notwithstanding this analysis though, the Panel believes that it is more likely that they do not possess the missiles, but want the people to believe they have this capability, as such a technical threat would maintain the strategic pressure being exerted on Saudi Arabia by the Houthi 'missile campaign'. Figure 42.3 shows a missile claimed to be a ZELZAL-3 by the Houthis, whereas figure 42.4 shows a real Iranian version.

Figure 42.3
Houthi released image of ZELZAL-3[151]

Figure 42.4
Iranian ZELZAL-3[152]

E. SOMOD FFR

12. The Houthis have also claimed to have manufactured and designed a missile they refer to as the SOMOD (a.k.a SOMOUD) ('Steadfastness"). Imagery though shows a rocket very similar to that they claim as the ZELZAL-3 (see section C).

[151] Jonothan Azaziah. *All Hail Ansarullah's Ingenuity: Zelzal-3 Ballistic Missile is Crushing Saud Forces*. Mouqawama. 11 July 2016. http://mouqawamahmusic.net/all-hail-ansarullahs-ingenuity-new-zelzal-3-ballistic-missile-is-crushing-saudi-forces/.
[152] Janes' Weapons.

Figure 42.5
Houthi released image of SOMOD

Figure 42.6
Houthi released image of SOMOD

13. Analysis of the imagery of this rocket leads the Panel to the same conclusions as made for the Houthi claimed 'ZELAL-3'. It is a 'mock up' only as there are no indications of any nozzle, or fuze being fitted. The fins appear to have been spot welded to the missile main body, rather than been free to move to enable flight ballistic adjustments. The nose appears possibly to have been blackened by the addition of plastic adhesive tape.

14. The Panel made some ballistic estimates for the range of such a rocket (see appendix A), which used 'best case' data and still the maximum likely range would be no more than 44km.

F. Systems accuracy for the free flight rockets

15. The Circular Error Probability (CEP) is a measure of a weapon system's precision or accuracy. It is defined as the radius of a circle, centred about the mean, whose boundary is expected to include the landing points of 50 per cent of the warheads. Thus theoretically 50% of munitions will land within one CEP, 93.7% within two CEP and 99.8% within three CEP. In reality the CEP is an elliptical confidence region for indirect fire weapons such as FFR, and accuracy thus even more difficult to predict.[153] The CEP is heavily influenced by the missile guidance system for guided weapons. Accuracy will be further degraded by operational factors such as: 1) wind strength and direction along flight path; 2) mis-alignment or mis-orientation of the launcher from the target; 3) propellant age and degradation within the missiles; 4) launcher vibration; and 5) thrust misalignment due to damage to the rocket.

G. International humanitarian law aspects

16. FFR are specifically designed to be an area weapon, as precision accuracy cannot be guaranteed. Since the blast and fragmentation danger areas are primarily based on the size and design of the explosive warhead, its likely impact on civilians is often foreseeable, especially when directed at a civilian populated areas.[154] Its effects, depending on the circumstances, may violate IHL principles relating to the prohibition on indiscriminate attacks.[155]

H. Summary of technical data for Houthi possible missile and rocket types

Table 42.1 also includes explosives engineering analysis that predicts the blast danger areas for humans. Many more fatalities and injuries from fragmentation effects can be expected at far greater ranges though.

[153] More detailed information on CEP and accuracy of free flight rocket systems may be found in *Cross K et al* Explosive Weapons in Populated Areas – Technical considerations relevant to their use and effects. pp.28–34. Armament Research Services. Australia. May 2016.
[154] OCHA Report "Protecting Civilians from the Use of Explosive Weapons in Populated Areas" at https://docs.unocha.org/sites/dms/Documents/EWIPA Fact Sheet - Latest.pdf.
[155] See ICRC Customary IHL Study Rule 11 and 12.

Table 42.1
Summary of possible Houthi missile types

FFR/SRBM type	Length (m)	Diameter (m)	Range (km)	Warhead NEQ [1] (kg)	CEP (m)	Permanent hearing damage (m) (@34.5KPa)	99% fatalities (m) (@1,380kPa)	Remarks
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8.2	10.5	**Modification of S-75 "Dvina". Unmodified maximum range is 56km.** [2]
[illegible]	6.4	0.65	185	482	150	73.7	14.4	
[illegible]	11.25	0.88	300	985	450	93.5	18.2	
[illegible]	10.94	0.99	500	985	450	93.5	18.2	**DPRK SCUD-B copy**
[illegible]	10.94	0.88	800	985	450	93.5	18.2	**90 supplied to Yemen**
[illegible]	10.94	0.88	700	985	450	93.5	18.2	*Iran Hwasong 5 copy*
[illegible]	11.25	0.88	700	985	450	79.9	15.5	*Not confirmed if any supplied to Yemen*
[illegible]	10.94	0.88	500	770	1,000	86.3	16.8	*DPRK SCUD-C copy*
[illegible]	11.66	1.25	1000+	770	1,000	86.3	16.8	*Not confirmed if any supplied to Yemen*
[illegible]	10.94	0.88	500	770	700	86.3	16.8	*DPRK SCUD-C copy*
[illegible]	11.66	1.25	1000+	770	1,000	86.3	16.8	*See Shahab 3*
[illegible]	11.25	0.88	700	985	450	93.5	18.2	*Iran Hwasong 6copy*
[illegible]	12.96	0.88	800	940		74.6	14.5	*Not confirmed if any supplied to Yemen*
[illegible]	9.60	0.61	250	600	1,800	79.9	15.5	*Iran Rodong-1 copy*
[illegible]	6.00		60		800			*Not confirmed if any supplied to Yemen*
SEMOUD	4.00	0.56	10	100		63.0	12.3	**Reported but not confirmed**

[1] Net Explosive Quantity.
[2] Letter from Permanent Mission of the Russian Federation of 29 December 2016.

I. Summary of reported Houthi SRBM and FFR attacks against Saudi Arabia

Table 42.2 is a summary of reported Houthi forces SRBM or free flight rocket FFR attacks against Saudi Arabia. The Government of Saudi Arabia has confirmed those shown in bold text.

Table 42.2:
Summary of reported Houthi missile and FFR attacks against Saudi Arabia

		Target Area			*Launch Point (LP) in Yemen*			
Date	*Missile type claimed*	*Location*	*Latitude*	*Longitude*	*Location*	*Latitude*	*Longitude*	*Comments*
16 Jun 2015	SCUD (Borkan-1)							Reported as intercepted and destroyed in flight
26 Aug 2015	SCUD (Borkan-1)	Jazan	16°53'47"N	44°33'26"E				Reported as intercepted and destroyed in flight
26 Aug 2015	**QAHER-1**	**Jazan**	**16°53'47"N**	**44°33'26"E**	**Al Sabeen, Sana'a**	**15°18'05" N**	**44°12'54" E**	**Intercepted and destroyed in flight @30km from Intercept Weapon System (IWS)**
15 Oct 2015	SCUD (Borkan-1)	Khamis Mushayt Airport	18°18'19"N	42°44'43"E				
4 Dec 2015	QAHER-1	Jazan Airport	16°53'59"N	44°35'01"E				
9 Dec 2015	QAHER-1	Jazan	16°53'47"N	44°33'26"E				Al-Ain Al-Harreh military base
9 Dec 2015	QAHER-1	Jazan	16°53'47"N	44°33'26"E				Al-Saleh military base
11 Dec 2015	QAHER-1	Al-Jamarak						
13 Dec 2015	**QAHER-1**	**Khamis Mushayt**	**18°18'17"N**	**42°43'54"E**	**Tussen Huthen Sada'a**	**16°25'40" N**	**44°08'08" E**	**KSA confirmed**
18 Dec 2015	QAHER-1	Najran	17°33'19"N	44°14'33"E				Impacted east of town
19 Dec 2015	QAHER-1	Najran	17°33'19"N	44°14'33"E				Impacted near museum
19 Dec 2015	QAHER-1	Al-Wawal	1630'41"N	42°58'24"E		15°23'41" N	44°10'10" E	Border crossing point
20 Dec 2015	QAHER-1	Khamis Mushayt Airport	18°18'19"N	42°44'43"E				
21 Dec 2015	QAHER-1	**Jazan**	**16°53'47"N**	**44°33'26"E**	**Geraf, Sana'a**	**15°23'41" N**	**44°10'10" E**	**Intercepted and destroyed in flight @35km from IWS**
21 Dec 2015	QAHER-1	**Jazan Airport**	**16°53'59"N**	**44°35'01"E**	**NE of Pilots City, Sana'a**	**15°24'48" N**	**44°13'05" E**	**Intercepted and destroyed in flight @20km from IWS**
22 Dec 2015	QAHER-1	Jazan Aramco Facility						
23 Dec 2015	QAHER-1	**Khamis Mushayt**	**18°18'19"N**	**42°44'43"E**	**Tussen Huthen Sada'a**	**16°26'05" N**	**44°03'55" E**	**KSA confirmed**
26 Dec 2015	QAHER-1	**Najran**	**17°33'19"N**	**44°14'33"E**	**Al Genadib**	**15°50'48" N**	**44°14'05" E**	**Intercepted and destroyed in flight @21km from IWS**
27 Dec 2015	SCUD (Borkan-1)	Najran	17°33'19"N	44°14'33"E				Reported as intercepted and destroyed in flight
27 Dec 2015	QAHER-1	Jazan	16°53'47"N	44°33'26"E				
28 Dec 2015	QAHER-1	Najran	17°33'19"N	44°14'33"E				Reported as intercepted and destroyed in flight
30 Dec 2015	QAHER-1	Jazan Aramco Facility	16°53'47"N	44°33'26"E				Reported as intercepted and destroyed in flight
31 Dec 2015	QAHER-1							Reported as intercepted and destroyed in flight
1 Jan 2016	QAHER-1	**Khamis Mushayt**	**18°18'17"N**	**42°43'54"E**	**Dabbaj Valley**	**16°41'43" N**	**43°51'51" E**	**KSA confirmed**
7 Jan 2016	QAHER-1	**Jazan**	**16°53'47"N**	**44°33'26"E**		**15°00'08" N**	**44°13'35" E**	**Intercepted and destroyed in flight @25km from IWS**

Date	*Missile type claimed*	*Target Area*			*Launch Point (LP) in Yemen*			*Comments*
		Location	*Latitude*	*Longitude*	*Location*	*Latitude*	*Longitude*	
8 Feb 2016	QAHER-1	Khamis Mushayt Airport	18°18'19"N	42°44'43"E				
8 Feb 2016	QAHER-1	**Abha**	**18°14'22"N**	**42°31'33"E**	**Tussen Huth Sada'a**	**16°25'39" N**	**44°08'34" E**	**Reported as intercepted and destroyed in flight**
9 Feb 2016	QAHER-1	**Jazan Airport**	**16°53'59"N**	**44°35'01"E**	**East of Sana'a**	**15°20'50" N**	**44°02'33" E**	**Intercepted and destroyed in flight @56km from IWS**
13 Feb 2016	QAHER-1	**Abha Airport**	**18°14'10"N**	**42°39'29"E**	**NE of Al Hazm**	**16°24'23" N**	**44°04'51" E**	**Intercepted and destroyed in flight @18km from IES**
9 May 2016	QAHER-1	**Khamis Mushayt**	**18°18'19"N**	**42°44'43"E**	**Dabbaj Valley**	**16°23'52" N**	**44°05'01 E**	**Intercepted and destroyed in flight @32km from IWS**
9 May 2016	QAHER-1	**Abha**	**18°14'22"N**	**42°31'33"E**	**Tussen Huth en Sada'a**	**16°40'05" N**	**43°50'53" E**	**Intercepted and destroyed in flight @17km from IWS**
13 May 2016	QAHER-1	Jazan	16°53'47"N	44°33'26"E				
20 May 2016	QAHER-1	Jazan	16°53'47"N	44°33'26"E				
31 May 2016	QAHER-1							Reported as intercepted and destroyed in flight
06 Jun 2016	SCUD (Borkan-1)	King Khalid Airbase	18°18'23"N	42°47'38"E				Intercepted and destroyed in flight by Patriot PAC-3
3 Jul 2016	QAHER-1	Abha	18°14'22"N	42°31'33"E				Reported as intercepted and destroyed in flight
23 Jul 2016	QAHER-1	Najran	17°33'19"N	44°14'33"E				Reported as intercepted and destroyed in flight
23 Jul 2016	QAHER-1	Najran	17°33'19"N	44°14'33"E				1 x young female injured. Possible Tochka missile
10 Aug 2016	QAHER-1	Military Base TBC						Reported as intercepted and destroyed in flight
10 Aug 2016	QAHER-1	TBC						Reported as intercepted and destroyed in flight
16 Aug 2016	QAHER-1	Najran	17°33'19"N	44°14'33"E				7 civilians died
19 Aug 2016	QAHER-1	Khamis Mushayt	18°18'19"N	42°44'43"E				Intercepted and destroyed in flight
26 Aug 2016	SCUD (Borkan-1)	Jizan Hamiyeh Power Plant[158]	16°52'55"N	42°32'44"E				
31 Aug 2016	Zelzal 3	Najran	17°33'19"N	44°14'33"E				
2 Sep 2016	SCUD (Borkan-1)	King Fahid Airbase	21°28'58"N	40°32'39"E				
10 Sep 2016	SCUD (Borkan-1)	Asir Province						
10 Sep 2016[159]	SCUD (Borkan-1)	Al Shqaiqh Water Plant	17°39'46"N	42°03'44"E				
12 Sep 2016	SCUD (Borkan-1)	King Khalid Airbase	18°18'23"N	42°47'38"E				Intercepted and destroyed in flight by Patriot PAC-3
3 Oct 2016	Not Known	Zahran						
4 Oct 2016	Zelzal 3	Al Montazah						Military base
8 Oct 2016	QAHER-1	Khamis Mushayt	18°18'17"N	42°43'54"E				

[158] Alleged launch video at https://www.youtube.com/watch?v=7BjOgyvwCZc.

[159] Reported as the fifth SCUD-C attack. http://www.yemenpress.org/yemen/scud-missile-at-electricity-station-and-water-desalination-in-jazan.html.

Date	*Missile type claimed*	*Target Area*			*Launch Point (LP) in Yemen*			*Comments*
		Location	*Latitude*	*Longitude*	*Location*	*Latitude*	*Longitude*	
9 Oct 2016	SCUD (Borkan-1)	Taif	21°28'52"N	40°33'07"E				Reported as intercepted and destroyed in flight
20 Oct 2016	Not Known	Jazan	16°53'47"N	44°33'26"E				
20 Oct 2016	Not Known	Nairan	17°33'19"N	44°14'33"E				
28 Oct 2016	Not Known	Jeddah or Mecca	21°25'27"N	39°49'35"E				Reported as intercepted and destroyed in flight 65km from target, which is in dispute. Longest range attack to date.
1 Nov 2016	Not Known	Jazan	16°53'47"N	44°33'26"E				
1 Nov 2016	Not Known	Najran	17°33'19"N	44°14'33"E				
1 Nov 2016	Not Known	Asir province						
15 Nov 2016	OTR-21 Tochka	Najran x 2	17°33'19"N	44°14'33"E				Reported as intercepted and destroyed in flight
26 Nov 2016	Not Known	Khamis Mushayt	18°18'17"N	42°43'54"E				Reported as intercepted and destroyed in flight

Appendix A to Annex 42: Ballistic estimates for Houthi 'ZELZAL-3' and 'SOMOD' rockets

Drag Equation

$D = Cd*((\rho*V*V)/2)*A$

Cd	Drag Coefficient	No Unit	0.45	ESTIMATE
ρ	Air Density	kg/m3	1.225	
V	Velocity	m/s	1568.5	From ESTIMATE
V	Velocity	m/s	1737.9	From EXHAUST VELOCITY
A	Cross-sectional Area	m2	0.2420	
	Calibre	mm	555	
D	Drag	N	164059.16	

Ideal Rocket Equation

M	Mass Rocket	kg	1000	
Mf	Mass Full Rocket Motor	kg	1000	
Me	Mass Empty Rocket Motor	kg	499	
Mp	Mass Propellant	kg	501	
MR	Propellant Mass Ratio	No Unit	2.004008016	
ln MR	Log MR		0.695149183	
SI	Specific Impulse		230	ESTIMATE
SI	Specific Impulse		254.641998	From Exhaust Velocity
t	time	sec	1	
F	Thrust	kg.m.s	1	
Veq	Engine Exhaust Velocity		2500	ESTIMATE
g	Gravity	m/s2	9.81	
V	Velocity	m/s	1568.5	From ESTIMATE
V	Velocity	m/s	1737.9	From EXHAUST VELOCITY

Terminal Velocity

$Vt = (2*M/(Cd * \rho * A))^{0.5}$

M	Mass Rocket (Burnt Out)	kg	499	
Cd	Drag Coefficient	No Unit	0.45	ESTIMATE
ρ	Air Density	kg/m3	1.225	
A	Cross-sectional Area	m2	0.2420	
Vt	Terminal Velocity	m/s	86.5	
Vt	Terminal Velocity	kph	311.4	

Range (with Drag)

$R = (V(0) * Vt * Cos\theta) / g$

V(0)	Initial Velocity	m/s	1568.5	ESTIMATE
V(0)	Initial Velocity	m/s	1737.9	FROM EXHAUST VELOCITY
Vt	Terminal Velocity	M/S	311.4	

θ	Launch Angle	Deg	37	
θ	Launch Angle	RAD	0.645771823	
g	Gravity	m/s2	9.81	
R	Range (with Drag)	m	39763.2	ESTIMATE
R	Range (with Drag)	m	44058.0	FROM EXHAUST VELOCITY

Annex 43: Improvised explosive device technology

A. Technology

1. Explosive types and commercial detonators

1. Tri-nitro-toluene (TNT) in cast, ground or flake form as the main filling of IEDs is replacing ammonium nitrate - fuel oil (ANFO), although recovered explosive remnants of war (ERW) are still also been utilized as the main charge. The use of TNT as a main filling by AQAP means that it is almost certain that they have developed an industrial process for the recovery of TNT, from captured or abandoned high explosive military ammunition.

2. Armed groups now have access to commercial electric detonators,[160] which has significantly increased their operational capability as the reliability of such detonators far exceeds the reliability of the traditional AQAP tri-acetone tri-peroxide (TATP) filled improvised detonators. Commercial electric detonators are now routinely recovered from failed or neutralised improvised explosive devices (IEDs). These commercial detonators provide armed groups with the capability to implement a sustained IED campaign.

2. IED technology transfer

3. 2016 has seen the introduction of new, to Yemen, IED technology and tactics. This includes explosively formed projectiles (EFP): first seen been used by the Red Army Faction in Germany (1989), then by Hezbollah in Lebanon (1990>) and then on a massive scale in Iraq (2003>). For example, the Quds Force of the Iranian Islamic Republican Guard Corps (IRGC) supplied and instructed insurgents in Iraq on the tandem use of EFP with Passive Infra Red (PIR) initiation systems.[161] This IRGC influence has now transferred to Yemen, which is demonstrated by the use of three digit identification or batch codes been written onto EFP IEDs (figure 43.1) and the recovery of PIR systems (figure 43.2).[162] Although the Panel has no evidence of the direct training of belligerents in the use of IEDs by the IRGC there are indicators as to their influence in the design and manufacture of these PIR IED (figure 43.2):

(a) Method of camouflage of the main charge;

(b) The shrink-wrap protection for the electronic components;

(c) The use and configuration of the stub helical antennae; and

(d) The use of BNC[163] type connectors.

4. Improvised radio controlled directionally focused fragmentation charges (DFFC) have now been identified from imagery of recovered IEDs in both Abyan and Al Mukalla.

5. Minimal metal pressure pads (MMPP) for victim operated IEDs (VOIED) have become much more widespread in 2016, with the emergence of a "standard" design. This suggests a degree of industrialization in the manufacture of such components, such as that used by ISIL in Iraq.

[160] Identified from a wide range of imagery. See later.
[161] Confidential source.
[162] All imagery in this annex from confidential sources.
[163] Bayonet Neill–Concelman.

Figure 43.1:
Probable Explosively Formed Projectile (EFP) IED, Ma'rib (12 Feb 2016).
Note: Batch/Lot Number (931).

Figure 43.2
'Rock' IED with possible Passive Infra Red (PIR) initiator, Saleh, Ma'rib (30 Oct 2016)

Figure 43.3
"Rock" IED, Ta'izz (16 Mar2016)

Figure 43.4
"Rock" IED, Ta'izz (16 Mar2016)

Figure 43.5
EFP Radio-Controlled IED (RCIED), Al Mukalla (16 May 2016)

Figure 43.6
Directional Focused Fragmentation Charge (DFFC) component for IED, Al Mukalla (16 May 2016)

Figure 43.7
IED Factory, Dar Saad, Aden (21 May 2016)

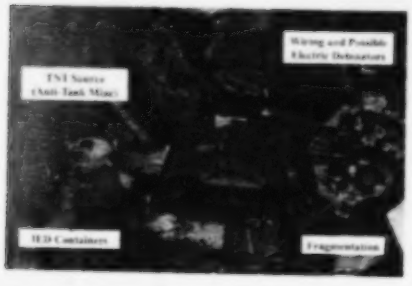


Figure 43.8
"Rock" IED with Minimal Metal Pressure Plate, Location TBC (10 Jun 2016)

Figure 43.9
RCIED with improvised fragmentation Khanfar, Abyan (18 Jun 2016)
NOTE: The red components are Dual Tone Multi Frequency (DTMF) circuits for decoding cell phone attack frequencies.[164]

Figure 43.10
Suicide Vest IED (PBIED) components, Al Mukalla (27 Jun 2016)[165]

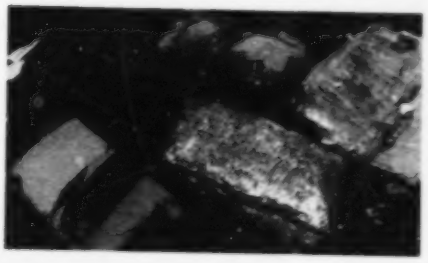


Figure 43.11
Under Vehicle IED (UVIED), Aden (7 Aug 2016)

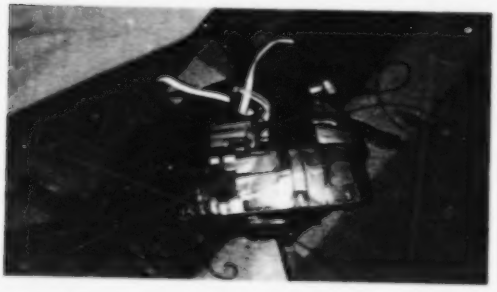


Figure 43.12
DFFC and RCIED Find, Ibb (Aug 2016)

[164] In this IED the audio output from the cell phone appears to be fed via the black 3.5mm audio jack into the input of the DTMF decoder firing switch. The decoder is probably configured for a single numeric firing signal ('9' on the one on the centre and '7' on the one on the right). Control of the DTMF decoder is normally via a PIC microprocessor on the same circuit board. The washing machine timer provides a delay to arming switch - a common technique previously used by IRGC trained terrorist and insurgent groups in Iraq.
[165] On 13 November 2016, 28 explosive vests/belts were seized from a bus entering Aden.

Figure 43.13
'Rock' IED and EFP IED, Location TBC (25 Oct 2016)

Figure 43.14
Breeze Block container for disguised IED, Ta'izz (Nov 2016)

6. The most recent example of technological and tactical transfer of IED knowledge is that of the use of a grenade fuze directly onto detonating cord by the suicide bomber[166] in Aden on 18 December 2016. This technique has been seen in Libya, Syria and Iraq and is a departure from the more normal electrical initiation system.

Figure 43.15
Suicide IED using grenade fuze, Aden (18 Dec 2016)

B. Future IED clearance challenges

7. There is now an ever more significant threat to explosive ordnance disposal (EOD) personnel than that last reported in 2013.[167] The few EOD teams that do exist have inadequate equipment and insufficient training to safely deal with such a high technical and tactical threat. Perhaps more importantly, the only organization with a base level of knowledge that could be built on to develop a credible IED Disposal (IEDD) capability is the UNDP supported Yemen Mine Action Centre (YEMAC),[168] but their direct involvement in IEDD during conflict could jeopardize their neutrality and primary humanitarian mission of mine action.

[166] Abu Hashim al-Radfani.
[167] Restricted UNDP Report – February 2013.
[168] A pilot IEDD course was run by UNDP for YEMAC in 2014, but the training team had to be withdrawn after threats were made against them.

8. The post conflict environment will provide further challenges for YEMAC humanitarian mine clearance as IEDs have been used in tandem with the anti-personnel minefields already present to form a defensive belt around belligerent positions. The safe clearance of these defensive integrated IED/mine belts will require the development of new operating procedures and protocols for the mine clearance teams, whom will require the direct support of IEDD teams.

Annex 44: ERW, mines and UXO summary

A. Mines and UXO

1. Use of mines in IEDs by Houthi and Saleh forces

1. The Panel continues to receive evidence of the use of mines by Houthi and Saleh forces, and the use of integrated mine and IED barrier belts by AQAP, and more recently the Houthi and Saleh forces. This often includes the use of abandoned unexploded ordnance (AXO), such as landmines or HE artillery shells, as the main charges of an IED.

2. Figures 44.1 to 44.6[169] show the removal of Houthi deployed IEDs, with anti-tank mines as main charges, from Kamb, Saleh Directorate, Ta'izz on 24 November 2016. This was part of a clearance operation by 'popular resistance' forces. The area was forcibly cleared of civilians by the Houthi in July 2015 and then used as part of a mine and IED barrier belt defensive position. This effectively prevented the return of civilians until the EOD threat had been cleared.[170]

Figure 44.1
Render Safe of IED (anti-tank (AT) mine main charge), Ta'izz, November 2016

Figure 44.2
Render Safe of IED (AT mine main charge), Ta'izz, November 2016

[169] From confidential source.
[170] On 11 August 2016, official sources reported one civilian death and two injuries in this area from explosive remnants of war (ERW).

Figure 44.3
Removal of AT mine main charge from IED, Ta'izz, November 2016

Figure 44.4
Removal of AT mine main charge from IED, Ta'izz, November 2016

Figure 44.5
Render safe of IED,[171]
Ta'izz, November 2016

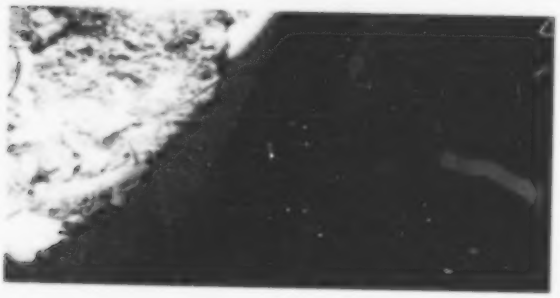


Figure 44.6
Location of integrated Mine/IED belt, Ta'izz, November 2016

3. Displaced persons have a right to voluntary return in safety to their homes or places of habitual residence as soon as the reasons for their displacement cease to exist.[172] IHL requires that all parties must take the necessary measures to ensure the safe return of those displaced.[173]

4. The Panel also received reports of more traditional mine laying by the Houthi near Mukalla during 2016. Figure 44.7 shows the hand drawn mine map of this area, whereas figure 44.8 shows the anti-tank mines being prepared for laying.

[171] The image shows either: 1) a tripwire; 2) a pull link to a switch; or 3) a pressure release wire, being cut. NOTE the probable detonating cord looped over the wall.
[172] ICRC Customary IHL Study Rule (CIHLR) 132.
[173] Ibid.

Figure 44.7
Houthi Mine Map (Sketch), near al Mukha, 2016[174]

Figure 44.8
Anti-tank mines, prepared for laying, Mukalla, 2016

2. Mines 'new' to Yemen

1. The Panel has identified APM types that have never been recorded as ever in the possession of the Yemeni Armed Forces. Yemen, as a signatory to the Mine Ban Treaty (1997), completed the destruction of its stockpile of APM on 27 April 2002. Whereas Yemen retained 4,000 APM for training and research purposes, none of these were of the type seen below.

2. As the possible deployment of these APM might be by an entity acting on behalf of individuals listed by the Committee, and/or the weapon might have been used in violation of IHL, the Panel was interested in establishing whether the presence of these APMs result from inappropriate deployment, illegal diversion, black market purchase or capture during military operations.

Figure 44.9
PRB M35 APM, Bab al-Mandab, October 2015[175]

Figure 44.10
GYATA APM, Najran, December 2015[176]

[174] Sketch drawn by Houthi engineer involved with the task via confidential source.
[175] Source: Confidential. The Government of Belgium confirmed to the Panel that this APM was manufactured by PRB, but regretted that they could not provide further assistance as to the end user, as their national legislation only commits them to maintaining export records for 5 years.
[176] Source: NGO individual. The Panel submitted a tracing request to the Government of Hungary and a response is still awaited.

Figure 44.11
PSM-1 APM, Ma'rib, March 2016[177]

Figure 44.12
PPM2 APM, Ma'rib, 9 April 2016[178]

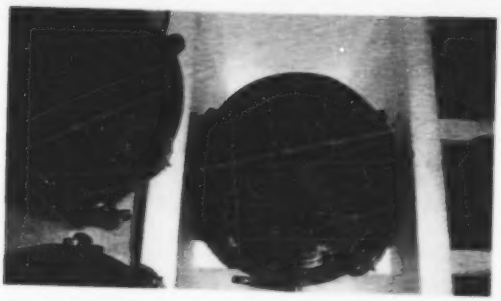


Figure 44.13
Projector Area Defence type APM, Lowder, Abyan, 25 May 2016[179]

Figure 44.14
Projector Area Defence type APM, Buraida, Aden, 21 July 2016[180]

B. Cluster munitions[181]

1. The Panel has either obtained or verified evidence that cluster munitions have been used by the Saudi Arabia-led coalition during the conflict. The Panel has analysed imagery[182] and consulted with credible sources[183] within Yemen

[177] Source: HRW. The Government of Bulgaria confirmed to the Panel that this APM was manufactured by Arsenal J.S.Co, Kazanlak in 1989 and was sold to the Ministry of Defence of Bulgaria in 1990. The Government of Bulgaria regretted that they could not provide further assistance as to the end user, as their national legislation only commits them to maintaining export records for 10 years.
[178] Confidential sources. The Panel requested more details on this seizure from the Governments of Saudi Arabia and the UAE to allow for submission of tracing requests to appropriate Member States. No response has been received yet from either government.
[179] Source: Yemen Mine Action Centre (YEMAC). The Panel initially assessed that this may be a Chinese APM. China stated in a letter to the Panel of 9 December 2016 that this particular mine was not of Chinese manufacture.
[180] Confidential source. The Panel initially assessed that this may be a Chinese APM. China stated in a letter to the Panel of 9 December 2016 that this particular mine was not of Chinese manufacture.
[181] From a wide range of credible and confidential sources unless otherwise referenced.
[182] Original imagery of media and NGO sources.
[183] Confidential sources with knowledge of mine action in Yemen.

about the BL-755 cluster munition debris and unexploded bomblets received from Al-Khadra[184] on 18 January 2016. The Panel is unconvinced by claims[185] from the Saudi Arabia-led coalition, or other stakeholders with an interest, that all the debris and unexploded bomblets were as the result of previous campaigns. The Panel identified the following evidence as key to their findings:

(a) There was insufficient weathering, caused by the sand erosion of paint etc, of the unexploded bomblets and debris for them to have been on the ground for any lengthy period of time;

(b) Civilian casualties in the area that the debris and unexploded bomblets were recovered from only started to occur post March 2015;

(c) A highly credible and confidential source with access to the International Management System for Mine Action (IMSMA) data for Yemen confirmed that the areas where the debris and unexploded bomblets were recovered from were not recorded as a Suspected Hazardous Area (SHA); the closest SHA was nearly 20km away;

(d) The comprehensive Landmine Impact Survey (LIS) completed in July 2000 showed no indication of a SHA close to the recently discovered cluster munition strike areas;

(e) The Yemen Mine Action Centre (YEMAC) has been conducting mine and UXO clearance operations in the region for the last ten years. They would undoubtedly have had legacy cluster bomblet impacted areas, or casualties from such an area, reported to them during this time. No reports were received; and

(f) The Director of YEMAC, Ahmed Alawi, confirmed in an interview with ITN (shown on 26 October 2016) that these were not legacy strikes. The Panel also consulted with previous senior YEMAC staff who verified that they had never seen any evidence of cluster munition use in this area, and that had it been previously used it would have been reported to their field teams.

2. The Panel has examined the evidence presented in an Amnesty International report [186] on the issue in detail, in addition to other independently obtained evidence, and finds the content and conclusions of the report as accurate, highly credible and compelling.

[184] 16°21'10.0"N 42°58'16.2"E (approximate location of al-Khadhra Village).
[185] Widely reported. For example AFP, 10 January 2016. https://www.yahoo.com/news/saudi-led-coalition-denies-using-cluster-bombs-yemen-075855238.html?ref=gs, or ITN News, 3 November 2016. http://www.itv.com/news/2016-11-03/saudi-arabia-deny-using-british-cluster-bombs-in-the-war-in-yemen/.
[186] https://amnesty.app.box.com/s/yx7xrh9g5cz2qj4fro6ozi2ygpmpfvxj.

Figure 44.15[187]
BL-755 cluster munition unit recovered in Al-Khadra[188] (18 January 2016)

Figure 44.16[189]
BL-755 cluster munition unit recovered from Al-Khadra to YEMAC explosive storehouse

3. The Panel has also obtained evidence of the use of cluster munitions by the Saudi Arabia-led coalition in other areas (see figures 44.17 to 44.20). The available evidence and the lack of weathering all strongly indicate the recent use of the cluster munitions and refute claims of them being legacy munitions.

Figure 44.17
CBU 58A /B cluster munition recovered in Sana'a (16 January 2016)

Figure 44.18
CBU 58/A cluster munition recovered in Sana'a (16 January 2016)

[187] Source: Amnesty International.
[188] 16°21'10.0"N, 42°58'16.2"E (approximate location of al-Khadhra Village).
[189] Source: Amnesty International.

Figure 44.19
CBU 58A /B cluster munition recovered Mastaba (27 March 2016)[190]

Figure 44.20
CBU 58A /B cluster munition recovered Mastaba (27 March 2016)

C. Abandoned explosive ordnance (AXO) in civilian areas

1. In March and April 2016 a demining team found a cache of 34 items of abandoned unexploded ordnance in Ta'izz university. This included mines, artillery shells and TNT blocks (figure 44.21 and 44.22).

Figure 44.21
AXO, Ta'izz University (April 2016)

Figure 44.22
AXO, Ta'izz University (April 2016)

2. In storing ammunition within the university premises, these forces may also have being attempting to shield the military objects from attack. IHL also requires that parties to take all feasible precautions to protect the civilian population and civilian objects under their control against the effects of attacks.[191] It is possible that by storing ammunition in the University, the Houthi forces increased the likelihood of attacks against this civilian infrastructure.

[190] 16°13'40.80"N, 43°14'40.80"E.
[191] CIHLR 22.

D. Use of inert aircraft bombs

1. The Panel has identified the recent use of Mark 83 1,000lb inert concrete-filled aircraft bombs fitted with precision guidance units.[192] Although not strictly UXO, the issue has been included as they can have similar disruptive effects to daily life as they look like UXO.

2. The use of inert bombs is a deliberate tactic, although one not widely known, which has been used before in other conflicts[193] to attack high value targets (HVT) in built up areas where collateral damage is unacceptable. The theory being that the damage caused is limited to that imparted by the kinetic energy of the weapon, [194] as being non-explosive there is no blast, and a much reduced fragmentation danger area.[195] Two incidents, involving multiple inert bombs, have been identified to date (table 44.1 and figures 44.23 and 44.25). The protocols surrounding the preparation and loading of weapons are stringent and thus it is highly unlikely that these inert bombs were loaded onto an aircraft and then dropped by mistake.

Table 44.1
Incidents of inert A/C bombs

Date	*Location*	*Type*	*Quantity*	*Target*
1 Sep 2016	Tahir Square, Sana'a	Mark 82 Inert		
20 Sep 2016	Old City, Sana'a	Mark 82 Inert[196]	>5	NSB Office

Figure 44.23
Tahir Square, Sana'a (1 Sep 2016)

Figure 44.24
Tahir Square, Sana'a (1 Sep 2016)

[192] Clearly identified from engraved markings: NSN 1325 2015 20150-5824, EMPTY BOMB MK83, P/N V3682600_22KH NCAGE A4447?.
[193] Northern Iraq (1999), Iraq (2003), Libya (2011), Gaza and Syria.
[194] The Panel has estimated by calculation that the kinetic energy of an inert Mark 82 A/C bomb is equivalent to that of 56 one tonne vehicles travelling at 100mph.
[195] On 24 August 2007 a patent application was filed with the US Patent Office for a purpose designed Reduced Collateral Damage Bomb (RCDB). US Patent 7992498 granted on 9 August 2011. http://patents.com/us-7992498.html.
[196] The manufacturer was traced from the Commercial and Government Entity (CAGE) Code A4447 engraved on the bomb to RWM Italia S.p.A, Via Industrale 8.D, 25016 Ghedi, Italy.

Figure 44.25
Old City, Sana'a (20 Sep 2016)

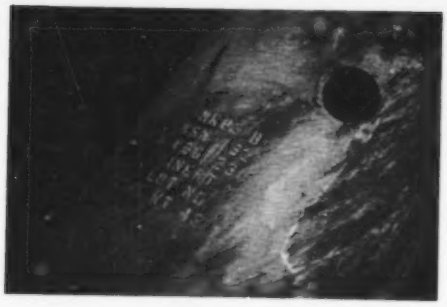


Figure 44.26
Old City, Sana'a (20 Sep 2016)

3. The Panel is also interested in the deliberate use of inert aircraft bombs as it may demonstrate a new tactic been introduced by the Saudi Arabia-led coalition designed to reduce the collateral damage during some air strikes. It may provide evidence of improved consideration of Collateral Damage Estimates as required under IHL. In these two particular incidents, however, there is still insufficient information to assess if the inert aircraft bombs were aimed at a legitimate military target. If not dropped on a specific and legitimate military objective, then their use is still a violation of IHL.

Figure 44.27
Old City, Sana'a (20 Sep 2016)

E. IHL aspects

1. IHL requires that when explosive ordnance, including landmines, is used, particular care must be taken to minimize their indiscriminate effects.[197] In the case at paragraph C.2, and in many others, the Panel is not convinced that the Houthi forces took the relevant precautions to prevent their effects on civilians. Such precautions, at a minimum, would normally include the delineation and marking of minefields from all exterior approaches, and a mine awareness programme.

F. ERW casualties and survivors

1. The Panel received multiple reports of people injured from ERW. For example, Human Rights Watch documents five ERW incidents, which killed six and wounded nine.[198] Mwatana Organization documented ten incidents of ERW explosions, which killed 32 civilians and injured 23.[199] This is only a fraction of that reported to YEMAC throughout Yemen, and has been included for illustrative purposes only at table 44.2.

Table 44.2
ERW casualties in Ta'izz area (2016)

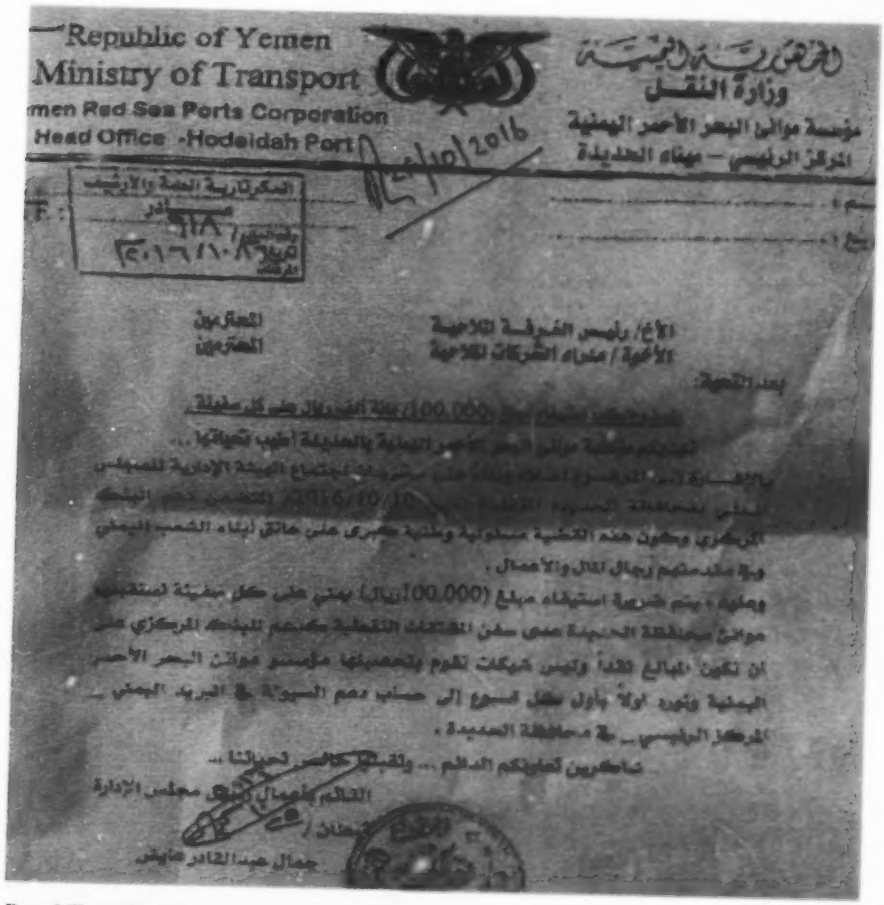
Ser	*Date*	*Location*	*District*	*Governorate*	*Fatal*	*Injured*	*Consequences*
1	25 Jan 2016	Al-Nashamah	Al-Maafer	Tai'zz	3		Civilians on a motorbike returning home.
2	10 Mar 2016	al-Qua'a	Al-Baidha	Al-Baidha	1		1 dead child.
3	22 Mar 2016	Haida area	Hareeb	Ma'rib	1	1	Children.
4	23 Apr 2016	Al-Turbah		Tai'zz	8	8	Bus. Includes 1 dead and 4 injured children
5	17 May 2016	Al-Qaloa'a	Al-Buraiq	Aden	2	1	1 child injured
6	19 May 2016	Wadi al-Helan	Majzr	Ma'rib	3	2	Includes 3 dead and 1 injured children
7	21 May 2016	Shaab al-Hafa'a.	Hareeb	Ma'rib	2	1	1 child injured
8	24 May 2016	Hareeb	Nihm	Sana'a	1	1	1 dead child and 1 injured female
9	9 Aug 2016	Wadi Hana	Al-Wazeeiah	Tai'zz	10	9	Includes 6 dead and 4 injured children
10	9 Aug 2016	Sabr district		Lahj	1		Truck

[197] CIHLR 81.
[198] https://www.hrw.org/news/2016/09/08/yemen-houthi-landmines-claim-civilian-victims.
[199] Information provided to the Panel.

Annex 45: Houthi illegal taxation

1. The Panel established that the Houthis are collecting tax from the Yemeni Red Sea Corporation on weekly basis. The following evidence shows that the Houthis are asking for the collection of a tax to be collected by the Yemeni Red Sea Corporation, to be transferred on a weekly basis to Hudaydah post office.

Figure 45.1:
Houthi "tax demand"



Panel Translation

Following the outcomes of the meeting of the administrative commission of the local council of al-Hudaydah Governorate of 10 October 2016 related to the support of the Central Bank, which is an important national responsibility of the Yemeni people and primarily businessmen and entrepreneurs.

Therefore, 100,000 Yemeni Riyal shall be contributed, for the support of the Central Bank, by each ship entering the port of al-Hudaydah apart from those carrying oil products. The payment in cash and not with checks shall be collected the Yemeni Red Sea ports and transferred on a weekly basis to the account at the Yemeni central post service of al ha-Hudaydah for the support of the Central Bank.

Annex 46: Houthi proxies and affiliates

(STRICTLY CONFIDENTIAL)

Annex 47: Saleh proxies and affiliates

(STRICTLY CONFIDENTIAL)

Annex 48: Financial activities of Khaled Ali Abdullah Saleh

1. This annex contains the supporting documentary evidence to demonstrate that Khaled Ali Abdullah Saleh has been acting on behalf of his father Ali Abdullah Saleh (YEi.003).

2. The Panel obtained information from confidential sources that Khaled Ali Abdullah Saleh has managed a financial structure comprising seven offshore companies, three acquired from his father and four more likely transferred from his brother according to indicators and bank accounts in Singapore and UAE. The Panel analysed accounts owned directly or indirectly by Khaled Ali Abdullah Saleh (XX010, XX011, XX013, XX014, XX018, XX021, XX024, XX025, XX032, XX324, XX352) during the period from January 2014 to July 2016 (table 1 below).

Table 48.1
Monthly transactions equivalent to US$ 100,000 plus

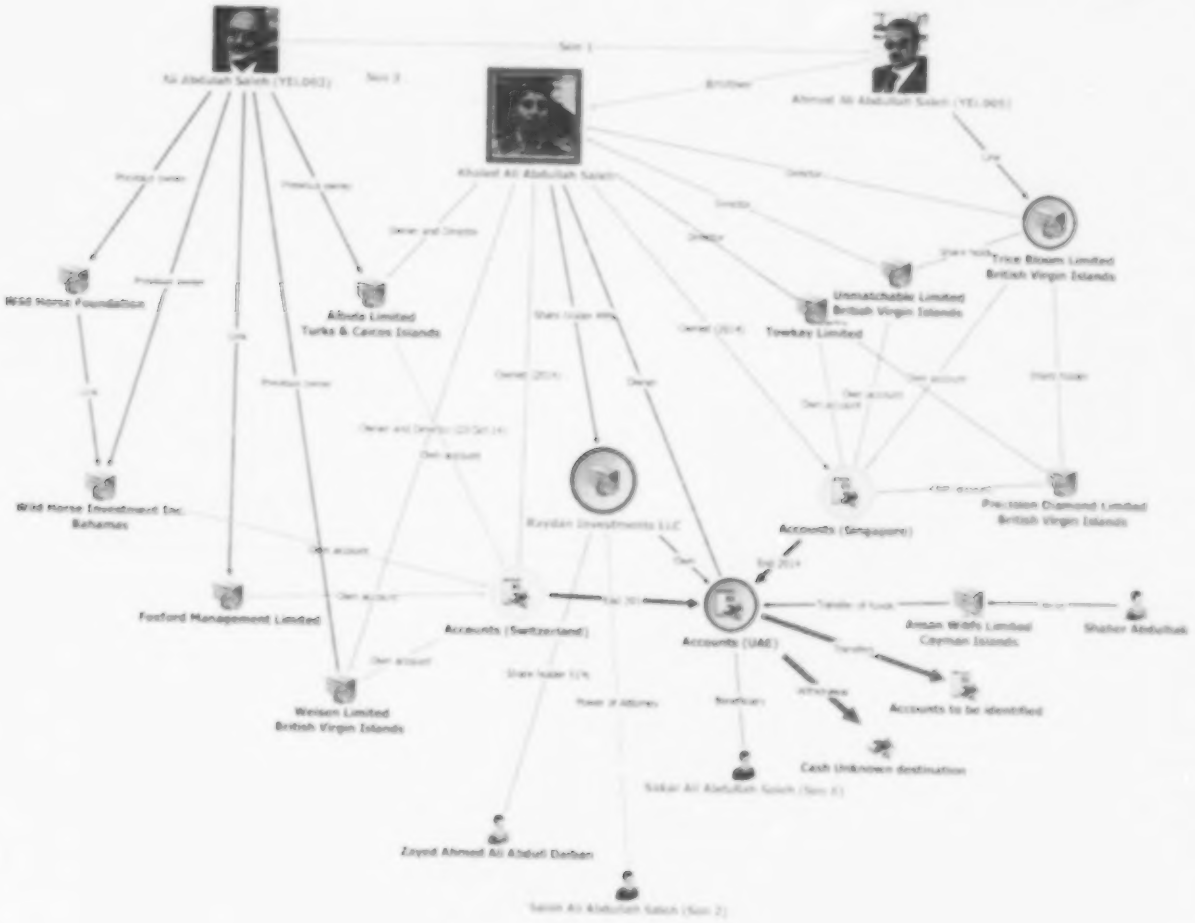
Month	*Number of major transactions*	*Total monthly debit major transactions US$ equivalent*	*Total monthly credit major transactions US$ equivalent*	*Remarks*
Jan 2014	7	-1,604,913.72	0.00	
Feb 2014	14	-6,022,101.52	43,950,192.92	
Mar 2014	1	-1,989,396.00	0.00	
Apr 2014	7	0.00	9,188,396.33	
May 2014	4	0.00	22,085,925.04	
Jun 2014	6	0.00	19,123,305.64	
Jul 2014		-615,037.31	0.00	
Aug 2014	4	-307,511.57	386,711.57	
Sep 2014	1	-1,326,109.26	415,593.00	
Oct 2014	8	0.00	34,770,278.46	
7 Nov 2014				**Listing of Ali Abdullah Saleh (YEi.003)**
Nov 2014	6	-281,513.16	53,628,109.07	
Dec 2014	35	-263,714,684.43	181,638,247.05	
Jan 2015		0	0	
Feb 2015	4	0	573,614.81	
Mar 2015	6	0	1,005,774.85	
14 Apr 2015				**Listing of Ahmed Ali Abdullah Saleh (YEi.005)**
Apr 2015	5	-2,039,658.62	545,040.00	
May 2015	3	-113,967.86	344,351.64	
Jun 2015	11	-5,827,225.39	628,608.26	
Jul 2015	6	-1,716,732.93	81,749.19	
Aug 2015	4	-818,755.00	1,106,431.20	
Sep 2015	2	-1,107.37	0	
Oct 2015	0	0	0	
Dec 2015	3	20151,630.95	200,165.94	
Jan 2016		0	0	
Feb 2016	3	-194,960.81	194,851.80	

Month	*Number of major transactions*	*Total monthly debit major transactions US$ equivalent*	*Total monthly credit major transactions US$ equivalent*	*Remarks*
28 Feb 2016				**Publication of the Panel's Final Report 2015**
Mar 2016	5	-2,083,042.87	2,182,874.03	
Apr 2016	1	0	150,124.46	
May 2016	1	-135,615.49	0	
Jun 2016	2	0	1,519,299.00	
Jul 2016	1	0	14,080.29	
Total	**153**	**-288,943,964.26**	**373,733,724.53**	

3. The Panel noted peaks in the amount of funds transferred during the designation periods, and following the publication of the Panel 2015 report, which for the first timed had identified the structure used by Ali Abdullah Saleh (YEi.003). This is likely an indicator that other funds have moved to Khaled's accounts. The Panel continues to investigate.

Figure 48.1

Link of Khaled Ali Abdullah Saleh and his assets with listed individuals



Appendix A to Annex 48: Timeline of company transfers

Table 48.A.1
Timeline of company transfer

Event	***Albula Limited*** ***(Turk and Caicos Islands (E29459))***	***Weisen Limited*** ***(British Virgin Islands (395883))***
Directors Resolution	23 October 2014	23 October 2014
Khaled Ali Abdullah Saleh entered in Register of Members and Share Ledger	23 October 2014	23 October 2014
Register of Members and Share Ledger printed	24 October 2014	24 October 2014
Register of Members and Share Ledger signed	28 October 2014	28 October 2014
Ali Abdullah Saleh (YEi.003) designated	7 November 2014	
Certificate of Incumbency[290] signed by Newhaven Corporate Services Limited (BVI)		14 November 2014
Certificate of Incumbency signed by Unicorn Administration Limited (Turk and Caicos Islands)	18 November 2014	
Certificate of Incumbency certified as a true copy by Supreeya Tacoun of NWT Management S.A	3 December 2014	3 December 2014
Certificate of Incumbency certified as a true copy by George Sarkis (position and company unknown)	6 December 2014	6 December 2014

[290] A Certificate of Incumbency lists individuals who have the authority to contract on behalf of the company or enter into legally binding agreements on behalf of the company. Until it is signed and deposited with the national authority responsible for company registration those individuals listed do not have authority to enter the company into any legally binding contracts.

Appendix B to Annex 48: Funds transfers 1

Evidence that Khaled Ali Abdullah Saleh received US$ 33,471,993.37 and Euro 734,786.49 from **Albula Limited, Foxford Management Limited and Weisen Limited** companies, which he acquired from his father Ali Abdullah Saleh (YEi.003) during the period around his designation on 7 November 2014.

Image 48.B.1
Confidential bank source

Dear Sir,

After greetings,

Pursuant to Khaled Ali Abdullah Saleh maintained accounts with [redacted] ich (Account no. [redacted]) and in October 2014 there were inward remittances of USD 33,471,993.37 and Euro 734,786.49 into this account, as tabulated below:

Originators	Transfer Date	Incoming Transfers	
		(in EUR)	(in US$)
Albula Limited	24 Oct 2014	425,033.89	11,768,517.90
	29 Oct 2014		1,240,000.00
Foxford Management Limited	24 Oct 2014		10,466,515.22
Weisen Limited	24 Oct 2014	309,752.60	8,936,966.25
	29 Oct 2014		1,060,000.00
Total		**734,786.49**	**33,471,993.37**

We wish to advise that the originators of the transactions are not listed as designated entities.

Appendix C to Annex 48: Trice Bloom Limited

Figure 48.C.1
Shareholders of Trice Bloom Limited – Precision Diamond Limited and Unmatchable Limited

Name of Company: TRICE BLOOM LIMITED

Company Number: 1706337

REGISTER OF MEMBERS

Full Name:	PRECISION DIAMOND LIMITED				Occupation:	Corporation						Date Entered as a Member:		27 April 2012
Address:	P.O. Box 957, Offshore Incorporations Centre, Road Town, Tortola, British Virgin Islands											Date of Ceasing to be Member:		
	Shares Acquired					Shares Transferred								
Date	Certificate Number	Distinctive Nos. From	To	No. of Shares	Consideration Paid	No. of Transfer Deed	Certificate Number	Distinctive Nos. From	To	No. of Shares	Consideration Paid	Total Shares Held	Remarks	Entry Made By
27 April 2012	1	-	-	-2,916-	US$2,916.00							-2,916-	Allotment	

Full Name:	UNMATCHABLE LIMITED				Occupation:	Corporation						Date Entered as a Member:		27 April 2012
Address:	P.O. Box 957, Offshore Incorporations Centre, Road Town, Tortola, British Virgin Islands											Date of Ceasing to be Member:		
	Shares Acquired					Shares Transferred								
Date	Certificate Number	Distinctive Nos. From	To	No. of Shares	Consideration Paid	No. of Transfer Deed	Certificate Number	Distinctive Nos. From	To	No. of Shares	Consideration Paid	Total Shares Held	Remarks	Entry Made By
27 April 2012	2	-	-	-1,250-	US$1,250.00							1,250	Allotment	

CERTIFIED TRUE COPY

27 APR 2012

MARY LYNN ARNOTT

Page No:	1	Class of Share:	ORD	Par Value Per Share:	US$1.00

PLEASE NOTE: THE ORIGINAL OR COPY OF THIS REGISTER MUST BE KEPT AT THE OFFICE OF THE COMPANY'S REGISTERED AGENT. IF A COPY THEN PLEASE NOTIFY THE REGISTERED AGENT IN WRITING OF THE PHYSICAL ADDRESS OF THE ORIGINAL.

BVI786

Figure 48.C.2
Khaled Ali Abdullah Saleh – Sole shareholder of Unmatchable Limited

Name of Company: UNMATCHABLE LIMITED

Company Number: 1706360

REGISTER OF MEMBERS

Full Name:	KHALED ALI ABDULLAH SALEH				Occupation:	Businessman						Date Entered as a Member:		26 April 2012
Address:	20 Sa'ar Mosri Road Sana'a Yemen											Date of Ceasing to be Member:		
	Shares Acquired					Shares Transferred								
Date	Certificate Number	Distinctive Nos. From	To	No. of Shares	Consideration Paid	No. of Transfer Deed	Certificate Number	Distinctive Nos. From	To	No. of Shares	Consideration Paid	Total Shares Held	Remarks	Entry Made By
26 April 2012	1	-	-	-1,250-	US$1,250.00							1,250	Allotment	

27 APR 2012

Figure 48.C.3

Khaled Ali Abdullah Saleh – Sole shareholder of Precision Diamond Limited

Name of Company: PRECISION DIAMOND LIMITED

Company Number: 1700232

REGISTER OF MEMBERS

Full Name	KHALED ALI ABDULLAH SALEH	Occupation	Businessman	Date Entered as a Member	26 April 2012
Address	26 Sixty Meter Road Sana'a Yemen			Date of Ceasing to be Member	

Date	Shares Acquired					Shares Transferred							
	Certificate Number	Distinctive Nos		No. of Shares	Consideration Paid	No. of Transfer Deed	Certificate Number	Distinctive Nos		No. of Shares	Consideration Paid	Total Shares Held	Remarks	Entry Made By
		From	To					From	To					
26 April 2012	1	-	-	2,916	US$2,916.00							-2,916	Allotment	

CERTIFIED TRUE COPY

27 APR 2012

Figure 48.C.4

Khaled Ali Abdullah Saleh – Sole Director of Trice Bloom Limited

Name of Company: TRICE BLOOM LIMITED

Company Number: 1706337

CR:

REGISTER OF DIRECTORS

Date of Appointment	Full Name (Any Former Names or Alias)	Nationality and ID/PPT No.	Residential Address (or Registered Office Address)	Business Occupation or Other Directorship	Date of Ceasing to Act	Entry Made By
27 April 2012	KHALED ALI ABDULLAH SALEH	Yemeni 00013999	26 Sixty Meter Road Sana'a Yemen	Businessman		

CERTIFIED TRUE COPY

27 APR 2012

Sources: Confidential

Figure 48.C.5

Ahmed Ali Abdullah Saleh (YEi.005) appointed by Khaled Ali Abdullah Saleh as an authorized signatory to the accounts maintained by Trice Bloom on 13 December 2013.

TRICE BLOOM LIMITED
(the "Company")
(Incorporated in the British Virgin Islands)

MEMORANDUM IN WRITING BY THE DIRECTOR OF THE COMPANY PURSUANT TO THE ARTICLES OF ASSOCIATION OF THE COMPANY

CHANGE OF AUTHORISED SIGNATORIES

RESOLVED:

1. THAT the following person be appointed as new signatory to the accounts maintained by the Company with Branch (the "Bank"):

Name	Passport No.	Specimen Signature
Ahmed Ali Abdulla Saleh	00000017	

2. THAT the Accounts be operated by either one of the authorized signatories:

   Khaled Ali Abdullah Saleh
   Ahmed Ali Abdulla Saleh

3. THAT save for the aforesaid amendments, all instructions previously given to the Bank shall remain in full force.

4. THAT this resolution be communicated to the Bank and remained in force until an amending resolution is received by the Bank.

Date: 13 DEC 2013

Khaled Ali Abdullah Saleh
Director

Source: Confidential

Appendix D to Annex 48: Towkay Limited

Figure 48.D.1
Khaled Ali Abdullah Saleh – Sole shareholder of Towkay Limited

Name of Company: TOWKAY LIMITED

Company Number: 1706334

REGISTER OF MEMBERS

Full Name	KHALED ALI ABDULLAH SALEH	Occupation	Date Entered as a Member	26 April 2012
Address	26 Sitty Moon Road Sana'a Yemen		Date of Ceasing to be Member	

Date	Shares Acquired					Shares Transferred						Total Shares Held	Remarks	Entry Made By
	Certificate Number	Distinctive Nos. From	Distinctive Nos. To	No. of Shares	Consideration Paid	No. of Transfer Deed	Certificate Number	Distinctive Nos. From	Distinctive Nos. To	No. of Shares	Consideration Paid			
26 April 2012	1	-	-	1,834	US$1,834.00							-1,834-	Allotment	

27 APR 2012

Figure 48.D.2
Towkay Limited transfer of AED 1,128,400 to Raydan Investments Limited (20 August 2014)

DEBIT.ACCT.NO:1:1	[redacted]
CURRENCY.MKT.DR:1:1	1
DEBIT.CURRENCY:1:1	AED
DEBIT.AMOUNT:1:1	1128400.00
DEBIT.VALUE.DATE:1:1	20140820
DEBIT.THEIR.REF:1:1	[redacted]
CREDIT.ACCT.NO:1:1	[redacted]
CURRENCY.MKT.CR:1:1	1
CREDIT.CURRENCY:1:1	AED
CREDIT.VALUE.DATE:1:1	20140820
PROCESSING.DATE:1:1	20140820
ORDERING.CUST:1:1	TOWKAY LIMITED
ORDERING.CUST:2:1	P.O.BOX 957,OFFSHORE INC
ORDERING.CUST:3:1	CENTRE, ROAD TOWN TORT
ORDERING.CUST:4:1	BRITISH VIRGIN ISLANDS
IN.ORDERING.CUS:1:1	TOWKAY LIMITED
IN.ORDERING.CUS:2:1	P.O.BOX 957,OFFSHORE INC
IN.ORDERING.CUS:3:1	CENTRE, ROAD TOWN TORT
IN.ORDERING.CUS:4:1	BRITISH VIRGIN ISLANDS
ORDERING.BANK:1:1	

Inward SWIFT-Telex Payme
[redacted]
Currency Market
UAE DIRHAM

RAYDAN INVESTMENTS LI
Currency Market
UAE DIRHAM

Sources: Confidential

Appendix E to Annex 48: Funds transfers 2

Table 48.E.1
Summary of funds transfers through the UAE dormant account of Khaled Ali Abdullah Saleh

Date	*Amount (AED)*	*Equivalent (US$)*	*Transaction type*	*Account balance*
5 Jan 2014	290,000.00	78,952.50	Deposit	20,996.99
8 Dec 2014	3,324,541.47	905,106.42	Transfer	3,345,538.46
9 Dec 2014	36,700,000.00	9,991,575.00	Transfer	40,045,538.46
11 Dec 2014	10,000,000.00	2,722,500.00	Cash withdrawal	30,045,538.46
11 Dec 2014	26,700,000.00	7,269,075.00	Cash withdrawal	30,016,808.46
15 Dec 2014	36,700,000.00	9,991,575.00	Transfer	40,016,808.46
15 Dec 2014	37,000,000.00	10,073,250.00	Cash withdrawal	3,016,808.46
17 Dec 2014	55,000,000.00	14,973,750.00	Cash withdrawal	-51,943,191.54
17 Dec 2014	55,050,000.00	14,987,362.50	Transfer	3,066,808.46
25 Dec 2014	55,000,000.00	14,973,750.00	Cash withdrawal	51,943,191.54
25 Dec 2014	68,181,260.00	18,562,348.04	Transfer	16,238,068.46
28 Dec 2014	66,000,000.00	17,968,500.00	Cash withdrawal	-49,761,931.08
28 Dec 2014	122,032,162.62	33,223,256.27	Transfer	72,270,231.08
28 Dec 2014	13,200,000.00	3,593,700.00	Transfer	59,070,231.08
30 Dec 2014	110,000.00	29,947.50	Transfer	68,960,181.08
30 Dec 2014	58,960,181.08	16,051,909.30	Cash withdrawal	0.00
Total	**308,660,181.08**	**84,032,734.30**		

* Based on average exchange rate 1 AED = 0.27225 US$ (2013-2016)

Source: Confidential

Figure 48.E.1
UAE bank statement (account XXX-01-04)

ACCOUNT NO [redacted]-01-4

CURRENCY: UAE DIRHAM
STATEMENT PERIOD: 01 JAN 2014 TO 31 JUL 2015

TRAN.DATE	VAL.DATE	DESCRIPTION	CHQ.NO	DR.AMT	CR.AMT	BALANCE
		BALANCE B/F				178,875.58
15 SEP 14	10 SEP 14	Outward Telex Charges [redacted]		80.00-		178,795.58
25 SEP 14	25 SEP 14	Transfer			101,000.00	279,795.58
		Transfer				
01 OCT 14	01 OCT 14	Credit Card Payment		166,337.83-		113,457.75
		CRM			310,000.00	423,457.75
14 OCT 14	14 OCT 14	Cheque Deposit	016311			
		Cheque Deposit				
05 NOV 14	05 NOV 14	Credit Card Direct Debit [redacted]		25,898.18-		397,559.57
		Cheque				
20 NOV 14	20 NOV 14	Cheque	187486	285,069.00-		112,470.57
		Cheque				
01 DEC 14	01 DEC 14	Outward Telex Charges [redacted]14		80.00-		112,390.57
		Telex transfer				
01 DEC 14	01 DEC 14	Telex Transfer		2,110.00-		110,271.69
		Credit Card Direct Debit				
06 DEC 14	06 DEC 14	[redacted]5		80,274.70-		29,996.99
		Inward Telex Transfer				
08 DEC 14	08 DEC 14	Inward Telex Transfer			3,374,541.47	3,345,538.46
		Transfer				
09 DEC 14	09 DEC 14	Transfer			36,700,000.00	40,045,538.46
		Cash Withdrawal				
09 DEC 14	09 DEC 14	Cash Withdrawal		10,000,000.00-		30,045,538.46
		Cheque	187487			
11 DEC 14	11 DEC 14	Cheque		28,730.00-		30,016,808.46
		Cash Withdrawal				
11 DEC 14	11 DEC 14	Cash Withdrawal		26,700,000.00-		3,316,808.46
		Transfer				
15 DEC 14	15 DEC 14	Transfer			36,700,000.00	40,016,808.46
		Cash Withdrawal				
15 DEC 14	15 DEC 14	Cash Withdrawal		37,000,000.00-		3,016,808.46
		Cash Withdrawal				
17 DEC 14	17 DEC 14	Cash Withdrawal		55,000,000.00-		51,983,191.54-

ACCOUNT NO [redacted]-01-4

CURRENCY: UAE DIRHAM
STATEMENT PERIOD: 01 JAN 2014 TO 31 JUL 2015

TRAN.DATE	VAL.DATE	DESCRIPTION	CHQ.NO	DR.AMT	CR.AMT	BALANCE
		BALANCE B/F				51,983,191.54-
17 DEC 14	17 DEC 14	Transfer			55,050,000.00	3,066,808.46
		Transfer				
22 DEC 14	22 DEC 14	Cash Withdrawal		10,000.00-		3,056,808.46
		Cash Withdrawal				
25 DEC 14	25 DEC 14	Cash Withdrawal		55,000,000.00-		51,943,191.54-
		Transfer				
25 DEC 14	25 DEC 14	Transfer			68,181,260.00	16,238,068.46
		Cash Withdrawal				
28 DEC 14	28 DEC 14	Cash Withdrawal		66,000,000.00-		49,761,931.54-
		Transfer				
28 DEC 14	28 DEC 14	Transfer			122,032,162.62	72,270,231.08
		Transfer				
30 DEC 14	30 DEC 14	LTR DTD 28DEC14		13,200,000.00-		59,070,231.08
		Outward Telex Charges				
30 DEC 14	30 DEC 14	AC-[redacted]		50.00-		59,070,181.08
		Telex transfer				
30 DEC 14	30 DEC 14	Telex Transfer		110,000.00-		58,960,181.08
		Cash Withdrawal				
30 DEC 14	30 DEC 14	Cash Withdrawal		58,960,181.08-		0.00
		ATM Cash Deposit				
31 DEC 14	31 DEC 14	SDM			100.00	100.00
		Account Closing Fees				
		CLOSING CHARGES FOR CHANGEABLE AMT :200		100.00-		0.00
		BALANCE AT PERIOD END				

Figure 48.E.2
UAE bank statement (account XXX-02-05)

ACCOUNT NO: [redacted]02-5

CURRENCY: US Dollar Dollar US
STATEMENT PERIOD: 01 JAN 2014 TO 31 JAN 2015

TRAN.DATE	VAL DATE	DESCRIPTION	CHQ.NO	DR.AMT	CR.AMT	BALANCE
		BALANCE B/F				0.00
18 AUG 14	18 AUG 14	Cash Deposit			79,200.00	79,200.00
10 SEP 14	10 SEP 14	Telex transfer		79,200.00-		0.00
04 DEC 14	04 DEC 14	Telex Transfer Inward Telex Transfer			85,251,228.22	85,251,228.22
09 DEC 14	09 DEC 14	Inward Telex Transfer Transfer		10,000,000.00-		75,251,228.22
15 DEC 14	15 DEC 14	LTR DTD 09DEC14 Transfer		10,000,000.00-		65,251,228.22
17 DEC 14	17 DEC 14	LTR DTD 15DEC14 Transfer		15,000,000.00-		50,251,228.22
17 DEC 14	17 DEC 14	LTR DTD 17DEC14 Inward Telex Transfer			1,678,042.25	51,929,270.47
25 DEC 14	25 DEC 14	Inward Telex Transfer Transfer		18,578,000.00-		33,251,270.47
28 DEC 14	28 DEC 14	LTR DTD 25DEC14 Transfer		33,251,270.47-		0.00
		LTR DTD 28DEC14				
		BALANCE AT PERIOD END				0.00

Sources: Confidential

Figure 48.E.3
UAE bank letter

Dear Sir,

After greetings

With reference to your Notice No. 189/2015, we wish to inform you that we did not receive any financial transfer for an amount of US 34 Million from Singapore in the name of Khaled Ali Abdullah Saleh in December 2014.

However, we have received two remittances in December 2014 with the following details:

Name of Remitter	Date of Transfer	Amount-USD
Khaled Ali Abdullah Saleh	04-December-2014	85,251,228.22
Khaled Ali Abdullah Saleh	17-December-2014	1,578,042.25

Further, we would like to inform you that the account of Khaled Ali Abdullah Saleh was closed in December 2014.

In case you require any further details we would be happy to provide you the same.

Thanking you
Yours faithfully

Source: Confidential

Appendix F to Annex 48: Funds transfer from Trice Bloom Limited to Raydan Investments Limited

Image.48.F.1
Trice Bloom Limited funds to Raydan Investments Limited

Transaction Summary - Trice Bloom Limited				
FD account		Significant Activities		
28-May-14		Transfer US20m to Raydan Investments LLC (FGB HO)		
27-Nov-14		Interest transfer to Mr Khaled Account in		181,610.47
27-Nov-14		Transfer of Principal to Mr Khaled Account in Singapore		51,538,896.50

Source: Confidential

Appendix G to Annex 48: Raydan Investments Limited UAE commercial licence and documentation

Image.48 G.1
Raydan Investments Limited UAE commercial licence

مركز أبوظبي للأعمال
Abu Dhabi Business Center

دائرة التنمية الاقتصادية
DEPARTMENT OF ECONOMIC DEVELOPMENT

Commercial License

رخصة تجارية

License No		CN-1514132	
Unified ID for ADCCI		316454	
Legal Form	Limited Liability Company		شركة ذات مسؤولية محدودة
Trade Name	RAYDAN INVESTMENTS L.L.C.		ريدان للاستثمارات ذ.م.م
Issue Place	Abu Dhabi		ابو ظبي
Establishment Date		07/07/2013	
Issue Date		03/09/2014	
Expiry Date		02/09/2015	

شريك	الامارات العربية المتحدة		زايد احمد علي عبدالله تميم	20043316
Partner	United Arab Emirates	- -		
شريك	اليمن		خالد علي عبدالله صالح	41248893
Partner	Yemen	Khaled Ali Abdullah Saleh		

Commercial Activities

- Commercial Enterprises Investment, Institution And Management
- Real Estate Enterprises Investment, Development, Institution And Management
- Onshore And Offshore Oil And Gas Fields And Facilities Services

الانشطة التجارية

- الاستثمار في المشروعات التجارية و تأسيسها و ادارتها
- استثمار وتطوير المشروعات العقارية و تأسيسها و ادارتها
- خدمات حقول وحفارات القطر و الغاز البرية والبحرية

Address USED ONLY FOR ISO 27134/001

العنوان: امارة ابوظبي، المقام، مدينة - سعو الشيوخ / فاطمه بنت مبارك

Image 48.G.2
Raydan Investments Limited UAE bank documentation

Dear Sirs,

Subject: Opening a call/current account for firm/company under formation.

Please arrange to open a call/current account in dirhams in the name of Raydan Investment LLC under formation and arrange to issue the paid up capital certificate in favor of Department of Economic Development –Abu Dhabi s per attached Articles of Association .

Below are the details.

S.No.	Name of Partner/Shareholder	Amount (AED)	Share (%)
1	Zayed Ahmed Ali Abdulla Daiban	76,500.00	51%
2	Khaled Ali Abdullah Saleh	73,500.00	49%
	Total		

The paid-up capital amount will be deposited with you into the account of the firm/company to be opened.

Kindly consider this as an authorization letter to block/freeze the paid-up capital amount in full in the bank's favour until the following documents are submitted to you:

- Trade Liconse
- Chamber of Commerce Certificate
- Registration Certificate

After above documents are presented to the bank, you are kindly requested to release any amounts of the paid-up capital only to the authorized persons to manage the account.

Yours faithfully,

Authorized Signatory

Source: Confidential

Image 48.G.3
Raydan Investments Limited UAE legal relationship details

Legal Relationship Details

Date : 14-07-2016

CIF No 8035250131 Corporate Name RAYDAN INVESTMENTS LLC

Legal Relationship Holder for RAYDAN INVESTMENTS LLC

CIF No	Name	Issue Date	Expiry Date	Relationship	Contact No	Ownership %	Civil ID	Nationality
***	SALAH ALI ABDULLAHSALEH	09/07/2015	31/12/9999	POA Holder	971-2-9999999	0.0	***	YEMEN
8035207087	KHALED ALI ABDULLAH SALEH	31/05/2015	31/12/9999	POA Holder	***	0.0	***	YEMEN

RAYDAN INVESTMENTS LLC Acting As Legal Relationship for Other CIFs

CIF No	Name	Issue Date	Expiry Date	Relationship	Contact No	Ownership %	Civil ID	Nationality

No Data Found

Source: Confidential

Appendix H to Annex 48: Ansan Wikfs Investment Limited UAE commercial licence

Image.48.H.1
Ansan Wikfs Investments Limited UAE commercial licence

COMMERCIAL LICENSE رخصة تجارية

License Details

License No.	92286
Licensee	Ansan Wikfs Investments Limited
Operating Name	Ansan Wikfs Investments Limited
Legal Status	Branch of a Foreign Company
Business Unit	Energy and Environment Park
First Issue Date	30 June 2014
Current Issue Date	30 June 2014
Expiry Date	29 June 2015

تفاصيل الرخصة

رقم الرخصة	٩٢٢٨٦
صاحب الرخصة	انسان ويكفس انفستمنتس لمبتد
الاسم التجاري	انسان ويكفس انفستمنتس لمبتد
الشكل القانوني	فرع لشركة أجنبية
قطاع العمل	مجمع الطاقة والبيئة
تاريخ الإصدار الأول	٣٠ يونيو ٢٠١٤
تاريخ الإصدار الحالي	٣٠ يونيو ٢٠١٤
تاريخ الإنتهاء	٢٩ يونيو ٢٠١٥

Manager

Yousif Mohamedahmed Mohamed Elshiekh

المدير

يوسف محمد أحمد محمد الشيخ

Address

Premises: 2801
Floor: 28
Building: Shatha Tower
Dubai, United Arab Emirates

العنوان

المقر: ٢٨٠١
الطابق: ٢٨
المبنى: الشذى تاور
دبي، الإمارات العربية المتحدة

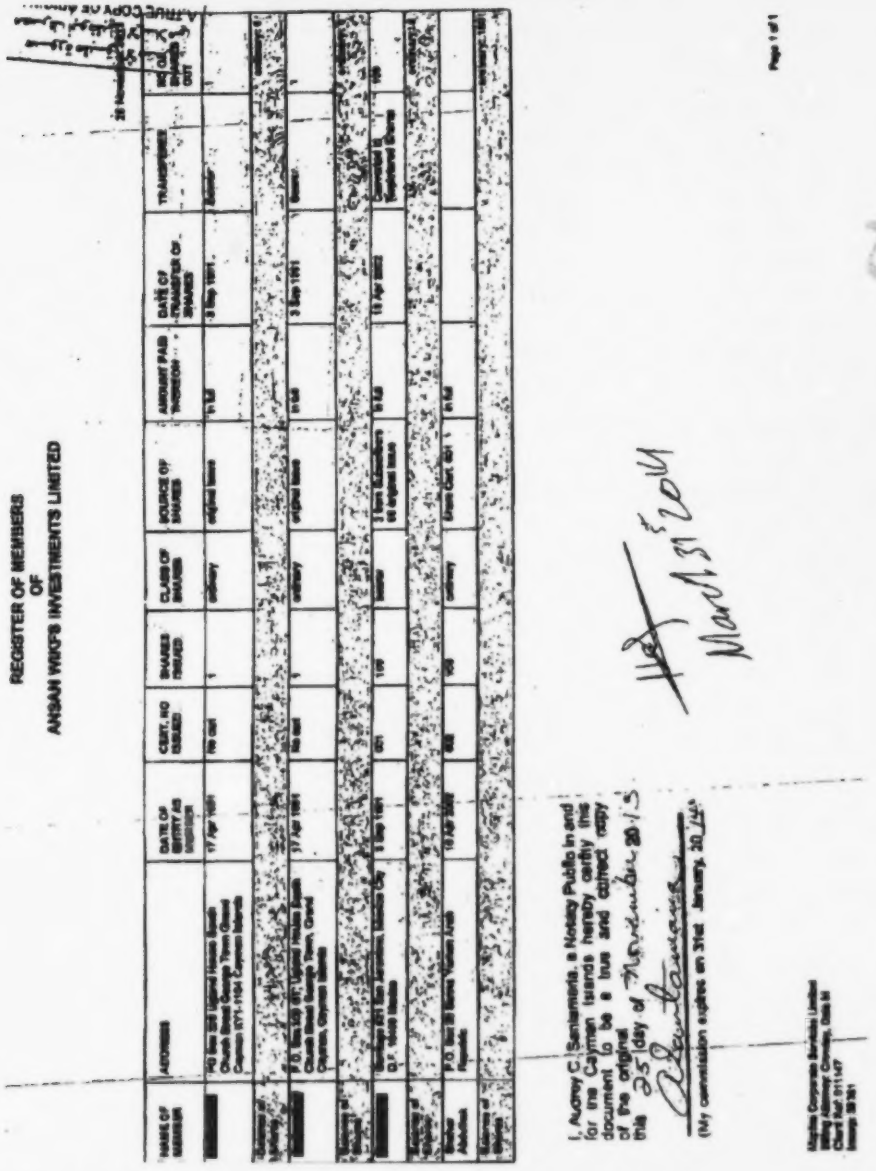
Segments + Activities

Regional Head Quarters
- Representative Office

القطاعات - النشاطات

Appendix I to Annex 48: Ownership of Ansan Wikfs Investment Limited

Image.48.I.1
Shaher Abdulhak as owner of Ansan Wikfs Investment Limited


REGISTER OF MEMBERS
OF
ANSAN WIKFS INVESTMENTS LIMITED
NAME OF MEMBER
ADDRESS
DATE OF ENTRY AS MEMBER
CERT. NO ISSUED
SHARES HELD
CLASS OF SHARES
SOURCE OF SHARES
AMOUNT PAID THEREON
DATE OF TRANSFER OF SHARES
TRANSFERS
NO. OF SHARES OUT
Page 1 of 1
I, Audrey C. Seniamiris, a Notary Public in and for the Cayman Islands hereby certify this document to be a true and correct copy of the original this 25 day of November 20 15
(My commission expires on 31st January, 20 16)
March 31st 2015

Source: Confidential

Appendix J to Annex 48: Transfers from Ansan Wikfs Investment Limited to Raydan Investment Limited

Image.48.J.1

Summary of funds transfers from Ansan Wikfs Investment Limited to Raydan Investment Limited

Date	*Amount (AED)*	*Equivalent (US$)**	
17 Sep 2014	3,050,478.00	830,492.64	Account Khaled XX11
30 Oct 2014	2,067,711.00	562,934.32	Account Khaled XX11
24 Feb 2015	1,230,254.00	334,936.65	Account Raydan XX18
3 Mar 2015	761,603.00	207,346.42	Account Raydan XX18
30 May 2015	763,583.00	207,885.47	Account Raydan XX24
9 Jun 2015	975,125.00	265,477.78	Account Raydan XX24
16 Jun 2015	975,125.00	265,477.78	Account Raydan XX24
12 Dec 2015	734,500.00	199,967.63	Account Raydan XX24
24 Apr 2016	550,875.00	149,975.72	Account Raydan XX24
Total based on evidence	**11,109,254.00**	**3,024,494.41**	
Total since listing of Ali Abdullah Saleh (YEi.003)	**5,991,065.00**	**1,631,067.45**	

Based on average exchange rate 1 AED = 0.27225 USD (2013-2016)

Source: Confidential

Annex 49: Air strikes affecting civilians and civilian infrastructure (2016)

1. This annex contains four case studies[201] relating to ten investigations undertaken by the Panel on air strikes that impacted on civilians and civilian infrastructure. These air strikes are attributed to the Saudi Arabia-led coalition. The following is a summary of the ten case studies:

Table 49.1
Air strikes affecting civilians and civilian infrastructure

Ser	*Date*	*Location*	*Type of EO*	*Civilian fatalities*	*Civilian injured*	*Effect on civilian objects*
1	15 Mar 2016	Al Khamees market, Mastaba	Mk 83 Bomb / Paveway	116	40+	Infrastructure damaged.
2	25 Mar 2016	T'baisha, Ta'izz	Not confirmed	10	0	Civilian house destroyed.
3	25 May 2016	Al Mahala, Lahj	Mk 82 Bomb / Paveway	6	3	Civilian house destroyed.
4	25 May 2016	Appendix A: Al Mahala, Lahj	Mk 82 Bomb / Paveway	0	2	Water bottling factory destroyed.
5	9 Aug 2016	Nahda, Sana'a	High Explosive aircraft bomb	10	13	Snack factory destroyed.
6	15 Aug 2016	Abs, Hajjah	GBU-12 / Paveway II	19	24	MSF hospital severely damaged.
7	13 Sep 2016	Ban al-Hareth, Sana'a	Mk 82 Bomb / Paveway IV	0	0	Alsonidar factory complex severely damaged.
8	22 Sep 2016	Ban al-Hareth, Sana'a	GBU-24 / Paveway IV	0	0	Alsonidar factory complex severely damaged.
9	24 Sep 2016	Mafraq Jiblah, Ibb	Mk 82 Bomb / Paveway	9	7	Civilian house destroyed.
10	8 Oct 2016	al-Sala al-Kubra, Sana'a	GBU-12 / Paveway II	132	695	Community hall destroyed.

2. The Panel adopted a stringent methodology to ensure that its investigations met the highest possible evidentiary standards, despite it being prevented from accessing Yemen. See annex 2 on IHL methodology.

3. Based on its analysis of the ten strikes, the Panel further finds that given the regular occurrence of incidents of the nature described in the above mentioned incidents:

(a) Those responsible for planning, deciding upon, or executing[202] those air strikes that disproportionately affect civilians and civilian objects may fall within the designation criteria contained in paragraphs 17 as those who

[201] The other case studies are available with the Secretariat.

[202] In reference to those executing the attacks, it is possible that the pilot of the aircraft may fire his weapon in reliance of the accuracy of information that may have been previously provided to him. In these cases, the Panel finds that it is those who plan and decide upon the attacks, whom have at their disposal the relevant information from a variety of sources, who have the greatest responsibility to ensure compliance with IHL. See also William Boothby, "The Law of Targeting", OUP (2012), pp. 132-133.

threaten peace and security of Yemen. Their acts may also fall under paragraphs 18 (a), (b), and (c) of resolution 2140 (2014);

(b) All member States of the Saudi Arabia-led coalition and their allies should take necessary measures to ensure that their forces engaged in coalition military operations respect IHL.[203] IHL underscores that States "…may not evade their obligations by placing their contingents at the disposal of…an ad hoc coalition";[204]

(c) All coalition member States and their allies have an obligation under the Geneva Conventions to ensure respect for IHL by the Saudi Arabia-led coalition.[205] This obligation is especially incumbent upon the Government in Yemen on whose request the Saudi Arabia-led coalition is conducting air strikes;[206] and

(d) High-level military commanders in the Saudi Arabia-led coalition are also responsible for IHL violations to the extent that they allow, or do not prevent, air strikes from taking place exclusively based on information received from third parties, even if they are Yemeni authorities, without ensuring that the forces under their command and control undertake the necessary assessments relating to proportionality and precautions in attack.[207]

List of appendices

Appendix A: Al Khamees market, Mastaba, Hajjah (15 March 2016).

Appendix B: Civilian house, Al Mahala, Lahj, (25 May 2016).

Appendix C: MSF hospital, Abs, Hajjah (15 August 2016).

Appendix D: Al-Sala Al-Kubra community hall, Sana'a (8 October 2016).

Appendix E: Summary of IHL case study evidence levels (air strikes).

[203] IHL requires each party to the conflict to "respect and ensure respect for international humanitarian law by *its armed forces* and other persons or *groups acting in fact on its instructions, or under its direction or control*." (See CIHLR 139).

[204] See commentary to Common Article 1 of the Geneva Conventions and Article 3 of The Hague Convention Concerning the Laws and Customs of War on Land of 1907, which holds States responsible for "all acts committed by persons forming part of its armed forces".

[205] This obligation to respect and ensure respect under Common Article 1 is not limited to those coalition States that actively participated in this air strike as stated in the Commentary. "The duty to ensure respect… is particularly strong in the case of a partner in a joint operation, even more so as this case is closely related to the negative duty neither to encourage nor to aid or assist in violations of the Conventions. The fact, for example, that a High Contracting Party participates in the financing, equipping, arming or training of the armed forces of a Party to a conflict, or even plans, carries out and debriefs operations jointly with such forces, places it in a unique position to influence the behaviour of those forces, and thus to ensure respect for the Conventions".

[206] S/2015/217.

[207] For an overview of command responsibility in this area, see CIHLR 142 and 153.

Appendix A to Annex 49: Al Khamees market, Mastaba, Hajjah (15 March 2016)

A. Introduction

1. This case study is one of two air strikes on civilian gatherings investigated by the Panel.[208]

B. Background to events

2. At approximately 11:30 hours on 15 March 2016, items of explosive ordnance (EO) were dropped from a military aircraft and detonated on the Al Khamees Market, Mastaba, Hajjah Governorate.[209] These explosions occurred approximately five to seven minutes apart at a distance of 50m between them. The UN verified that 116 individuals, including 22 children, were killed by the air strike,[210] MSF recorded over 40 wounded.[211]

3. There was a military checkpoint (CP) belonging to the Houthis approximately 140m from the second airstrike and 190m from the first air strike. This CP is usually manned by up to six fighters.[212] The two air strikes did not damage the CP.[213] It is possible that there were some individual fighters present in, or in the vicinity of, the market at the time of the air strike,[214] as Houthi fighters regularly visit the market to purchase qat and other commodities. However, witnesses and other investigators consistently confirmed that there was no large gathering of Houthi militias at the CP or in, or in the vicinity of, the market.[215]

---

[208] The other air strike was on a civilian gathering was on 8 October 2016, on a funeral hall in Sana'a. See case study at appendix D to this annex.

[209] EO Strike 1, 16°13'39.31"N, 43°14'42.04"E; EO Strike 2, 16°13'40.61"N, 43°14'41.08"E.

[210] "Zeid condemns repeated killing of civilians in Yemen airstrikes" at http://ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=17251&LangID=E. Health officials reported 102 casualties and 44 injured. See "Saudi-led coalition to investigate Yemen air strikes" at http://www.aljazeera.com/news/2016/03/saudi-led-coalition-investigate-yemen-air-strikes 20160316071229274.html and "Yemen: People collect 'torn limbs in bags and blankets' after Saudi-led warplanes pound market" http://www.ibtimes.co.uk/yemen-people-collect-torn-limbs-bags-blankets-after-saudi-led-warplanes-pound-market 201549689. Mwatana Organization, a Yemen-based organization documented over 131 civilian casualties, with 86 injured (information provided to the Panel on 01 December 2016). Human Rights Watch (HRW) reported 106 civilian casualties. See https://www.hrw.org/news/2016/04/07/yemen-us-bombs-used-deadliest-market-strike. The Government of Yemen stated that 65 were killed. It did not clarify how many of those were civilians and how many were fighters (letter dated 31 December 2016).

[211] "Yemen: MSF treats more than 40 wounded following airstrike on marketplace" at http://www.msf.org.uk/article/yemen-msf-treats-more-than-40-wounded-following-airstrike-on-marketplace.

[212] Local sources and three investigation teams that visited the site in the aftermath of the air strikes.

[213] Ibid.

[214] HRW says that the air strikes "may have also killed about 10 Houthi fighters..." and the UN reports that ten bodies were burnt beyond recognition. See "Yemen: US Bombs Used in Deadliest Market Strike" at https://www.hrw.org/news/2016/04/07/yemen-us-bombs-used-deadliest-market-strike and http://ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=17251&LangID=E. Reuters quote one source as stating there were around 20 fighters. "Death toll from Saudi-led air strikes on Yemeni market rises to more than 100" at http://af.reuters.com/article/worldNews/idAFKCN0WJ2KB. The Panel was also informed by one source that around twenty fighters arrived at the market to buy qat and left twenty minutes before the air strike. The Panel could not corroborate this statement with other witnesses and investigators.

[215] See below for details of a statement issued by the Joint Incident Assessment Team (JIAT) stating that one of the military objectives was a large Houthi gathering. In addition to Panel's independent investigations both the UN-led investigations and the HRW-initiated investigations found that there were no large gatherings of Houthi militias. See "U.N says Saudi-led bombing of Yemen market may be international crime" at http://www.reuters.com/article/us-yemen-security-un-idUSKCN0WK152 and https://www.hrw.org/news/2016/04/07/yemen-us-bombs-used-deadliest-market-strike.

Figure 49.A.1
Location of the market and the checkpoint

C. Technical analysis of physical evidence

4. Imagery analysis determined a fragment from the location of the first air strike as being part of a rear fin from a PAVEWAY terminal guidance unit for an aircraft bomb (figure 49.A.2).

Figure 49.A.2
Rear fin from PAVEWAY terminal guidance unit[216]

[216] Source: Confidential, (taken by investigation team that visited the site in the aftermath).

5. Post blast crater analysis determined that the size of the crater at the first air strike was almost certainly within the dimensional parameters for the detonation of 227kg of high explosives, which is the explosive weight of the Mark 83 variant high explosive aircraft bomb (figure 49.A.3).[217]

Figure 49.A.3
Explosion crater[218]

6. The only military entity operating the type of aircraft in the area that has the capability to deliver high explosive ordnance of this type is the Saudi Arabia-led coalition.

D. Response of the Saudi Arabia-led coalition

7. The responses of the Saudi Arabia-led coalition, JIAT and the Government of Yemen are documented below.

Entity / Individual	*Date*	*Statement*	*Source*
JIAT Statement	4 August 2016	"The United Nations news centre has claimed that the coalition State bombarded, and thus massacred, an estimated 106 people, in Suq Khamis Mastaba' in Hajjah governorate on 15 March 2016. Confirmed intelligence data shows that the target was a large gathering of armed Houthi militia recruits. The gathering was near a weekly market where the only activity takes place on Thursday each week. The operation took place on a Tuesday, and the target was a legitimate, high-value military objective that conferred a strategic advantage. It was also located 34 kilometres from the Saudi Arabian border, and therefore posed a threat to the troops positioned there".	Document with Panel.[219]

[217] A HRW Report of 7 April 2016, "*US Bombs Used in Deadliest Market strike*", attributed the damage to a Mark 84 (2,000lb) aircraft bomb based on fragments recovered. The Panel has not seen this evidence, and is therefore, based on the crater analysis of the first air strike, the Panel erring on the side of caution attributes the damage to the smaller Mark 83 (1,000lb) aircraft bomb.
[218] Ibid.
[219] Official UN translation.

Entity / Individual	*Date*	*Statement*	*Source*
JIAT Statement	5 August 2016	The media also reported: "Moreover, the prosecution did not provide proof of the claims that civilian casualties, and the JIAT found no proof of any fault made by the coalition forces, in the process, and that the Coalition forces have abided by the rules of international humanitarian law".	Saudi Press Agency [220]
Reuters quoting Brigadier General Ahmed Al-Asseri, Spokesperson of the Saudi Arabia-led coalition.	18 March 2016	"We use the information coming from the (pro-Hadi) Yemeni army because they are on the ground. The attack was under the control of the Yemeni army. It gave the target". Reuters also stated that the spokesperson "forwarded a graphic prepared by Hadi's government that said the target of the air strike was a military area where Houthi forces had gathered and that "they (Houthis) deceived people by saying it was a market".	Reuters[221]
Government of Yemen	18 March 2016	"A statement issued on Friday by Hadi's government said it had formed a committee to look into the bombing and whether it was the result of an air strike or of shelling by the Houthis, whom it accused of often blaming the coalition for attacks they carried out themselves".	Reuters[222]
Government of Yemen	31 December 2016	"According to sources from the militia 115 have been killed and dozens wounded. Our sources in the region confirm that the number of dead is 65. Also the incident occurred on a Tuesday. As the name of the market indicates people from the surrounding villages gather on the market day, which is Thursday. This confirms the hypothesis that the gathering was of houthis militia and that two technicals have been observed in the entrance of the market. The Government of Yemen doesn't have final information as the area is not under its control." (Unofficial translation).	Response to a Panel inquiry on the Government of Yemen's role in the incident received on 31 December 2016.

8. The Saudi Arabia-led coalition has not yet provided a response to Panel requests for information.[223]

E. Panel observations on Saudi Arabia-led coalition's statement, information provided by the Government of Yemen, and JIAT's findings relating to the air strikes

9. In assessing the Saudi Arabia-led coalition's compliance with IHL, the Panel has given due consideration to the official findings above. The Panel highlights that it did not have access to the information that was at the disposal of JIAT, despite requests for information to the Saudi Arabia-led coalition. The Panel will, therefore, base its IHL assessment on its own investigative findings. The Panel notes, however, discrepancies between the statements provided by the Government of Yemen and the Saudi Arabia-led coalition spokesperson on the attribution of responsibility relating to target selection (see paragraph 14).

[220] "Joint Incidents Assessment Team (JIAT) on Yemen Responds to Claims on Coalition Forces' Violations in Decisive Storm Operations" at http://www.spa.gov.sa/viewstory.php?lang=en&newsid=1524799.

[221] http://www.reuters.com/article/us-yemen-security-un-idUSKCN0WK152.

[222] Ibid.

[223] Panel letters dated 1 July 2016 and 21 November 2016.

F. Analysis of violations of IHL

10. In the absence of a response from the Saudi Arabia-led coalition, the Panel analyzed the applicable law in relation to this incident on the basis of its own independent investigations.[224]

11. The Panel investigations demonstrated that, while it is possible that some individual fighters may have been present amongst civilians,[225] there was no demonstrable evidence of a large gathering of Houthi fighters or recruits in, or in the vicinity of, the market place at the time of, or preceding, the two air strikes.[226] Statements and imagery gathered by the Panel also demonstrated that the market was functional on 15 March 2016 and that there were civilians, including children in, and in the vicinity of, the market at the time of the air strikes.[227]

12. The Panel finds that it is possible that the air strike targeted some Houthi fighters.[228] Yet, it is not convinced that the Saudi Arabia-led coalition respected relevant principles of IHL, including those relating to proportionality,[229] for the following reasons:

(a) The Panel notes that the Saudi Arabia-led coalition did not provide the Panel with information that demonstrated that a significant number of those who died or injured were Houthi fighters. Instead, information collected by the UN and other organizations demonstrate that attack resulted in at least 100 civilian deaths, of which approximately 20% were of children.[230]

(b) This likelihood of excessive harm to civilians and civilian objects could have reasonably been anticipated in the circumstances because: (i) the market place was a civilian object *prima facie* immune from attack; (ii) it was also a civilian gathering point; (iii) the market was functional on the day of the air strike; and (iv) that the timing of the attack would be such as to cause a disproportionately high number of civilian causalities. It is reasonable to expect that a commander ordering these air strikes should have been aware of the above factors, given that this information is readily available, and should have taken them into consideration when assessing the 'concrete and direct military advantage' of the air strikes.[231]

---

[224] See appendix E

[225] See footnote 496. The UK views that if the Commander made reasonable effort to gather intelligence, reviews the available intelligence, and concludes in good faith that he is attacking a legitimate military target, "he is unlikely to violate the principles of distinction if the target turned out to be of a different, civilian nature." See William Boothby, "The Law of Targeting", OUP (2012), p. 61.

[226] See footnote 496.

[227] The Panel was informed that while the weekly market is held on Thursdays, commercial activities take place on other days, although on a lesser scale than Thursdays. The fact that civilians, including, were in a functional market at the time of the strike was also independently verified by the UN and HRW. See section B.

[228] CIHLR 8 defines a military objective as follows: "In so far as objects are concerned, military objectives are limited to those objects which by their nature, location, purpose or use make an effective contribution to military action and whose partial or total destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage".

[229] Under IHL "launching an attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, *which would be excessive in relation to the concrete and direct military advantage anticipated*, is prohibited". (Emphasis added). See CIHLR 14.

[230] In the Galic Trial Judgement (2003), the International Criminal Tribunal for Former Yugoslavia held in respect of a shelling at a football tournament that "Although the number of soldiers present at the game was significant, an attack on a crowd of approximately 200 people, including numerous children, would clearly be expected to cause incidental loss of life and injuries to civilians excessive in relation to the direct and concrete military advantage anticipated". See http://www.icty.org/x/cases/galic/tjug/en/gal-tj031205e.pdf.

[231] See CIHLR 14.

(c) It is also relevant that the aircraft bombs were detonated inside a market place, and not "near" the market where the gathering of militias allegedly took place,[232] and that at least two known locations of Houthi fighters in, and in the vicinity of the market, were unaffected by the strikes.[233]

13. IHL requires military commanders and those responsible for planning and executing decisions regarding attacks to take all feasible precautions to avoid, and in any event to minimize, incidental loss of civilian life, injury to civilians and damage to civilian objects.[234] The fact that the Saudi Arabia-led coalition knew that this was a market place and thus a civilian location where there would ordinarily be a congregation of civilians (see paragraph 7), meant that they should have been particularly vigilant when undertaking a proportionality assessment and making use of available precautionary measures to minimize the incidental loss of civilian life and damage to civilian property.[235] It is also not clear what precautionary measures were taken by the Saudi Arabia-led coalition forces, including confirmation that the market was not active, as alleged by the JIAT, on the day of the attack.

14. The initial response of the Saudi Arabia-led coalition confirms that they relied exclusively on the information coming from the Government of Yemen.[236] The Panel notes that this is the second incident involving mass civilian casualties, that it investigated, in which the Saudi Arabia-led coalition or the JIAT alleged that parties affiliated with the Government of Yemen provided it with the target specific information.[237] The Government of Yemen did not provide sufficient information as to its role in the air strike. It referred to the gathering of Houthis as a "hypothesis".[238] It is difficult to justify an air strike on a civilian object, which is ordinarily a civilian gathering point, on the basis of a hypothesis. The Saudi Arabia-led coalition remains responsible for any violations relating to proportionality and precautions in attack, which it incurred as the party carrying out the air strikes.

G. Summary of findings

15. The Panel finds that:

(a) The Saudi Arabia-led coalition conducted two air strikes on a market place on 15 March 2016 that resulted in mass civilian fatalities and casualties;

(b) The Panel is unconvinced that principles in relation to proportionality were respected in this incident. If precautionary measures were taken, they were largely inadequate and ineffective;

---

[232] See the JIAT statement.

[233] The Panel finds that the nearby Houthi manned check point was unaffected by the strikes. Additionally, HRW quotes one witness and states, "He said that some armed Houthi fighters regularly ate and slept in a restaurant about 60 meters from where one bomb detonated. The restaurant was not damaged". https://www.hrw.org/news/2016/04/07/yemen-us-bombs-used-deadliest-market-strike.

[234] See Article 13(1) of Additional Protocol II to the Geneva Conventions and CIHLR 15 - 22.

[235] See commentary to CIHLR 14, and the United States Department of Defense Law of War Manual (2015), p.1033, which requires combatants to assess in good faith the information that is available to them, when conducting attacks.

[236] The spokesperson also forwarded to the media, a graphic prepared by the Government of Yemen that said that the target of the air strike was a military area where Houthi forces had gathered. The Panel has not had access to this graphic. http://www.reuters.com/article/us-yemen-security-un-idUSKCN0WK152.

[237] Press Statement by JIAT on the community hall incident in Sana'a on 8 October 2016. Document available with Panel.

[238] See paragraph 7. The Government of Yemen announced on 18 March 2016 that it had formed a committee to look into the air strikes. See https://www.hrw.org/news/2016/04/07/yemen-us-bombs-used-deadliest-market-strike. It appears that the task was entrusted to the National Commission on Human Rights. The Panel met with the Commissioners in July 2016 in Geneva who informed the Panel that this case is under investigation.

(c) Even if the Government of Yemen had provided it with target specific information, the Saudi Arabia-led coalition forces are still responsible for IHL violations regarding any failure on their part to undertake the requisite detailed assessments relating to proportionality and precautions in attack and their failure to ensure that relevant precautions were taken to minimize the effects on civilians as a result of the air strikes; and

(d) Those officers of the Government of Yemen that passed the information, or who were otherwise involved in the intelligence gathering and targeting processes in relation to this incident, may also be responsible for any IHL violations to the extent of their contribution.

Appendix B to Annex 49: Air strike on Civilian House in Al Mahala, Lahj (25 May 2016)

A. Introduction

1. This case study is one of the three investigations done on air strikes affecting civilian houses.

B. Background to events

2. At approximately 04:00 hours on 25 May 2016, two items of explosive ordnance, that were dropped from a military aircraft, detonated on, or in very close proximity to, a civilian house in the village of Al-Mahala, Lahj. The resultant explosions[239] killed six occupants of the house, one man, one woman, and four children, and critically injured one woman and two children. The neighbours refrained from assisting in rescue efforts after the first strike for fear of a second strike. It is certain that had it not been for the second strike that occurred approximately 2-5 minutes after the first, some more members of the family would have survived the attack. The only male adult of the house was a local Deputy Director of Education.

3. Very shortly afterwards another item of explosive ordnance, highly probably dropped from the same military aircraft as above, detonated in another house located 544 metres from the civilian house (figure 49.B.1). This house belonged to a local fighter, whom some say belongs to AQAP.[240] This latter strike did not result in casualties. Within a few minutes, a third series of air strikes impacted on a water bottling plant, which was located 8 km north of the house, (case study with Secretariat). The house was located in an area under the control of the legitimate government.[241]

Figure 49.B.1
Relative locations of houses[242]

[239] EO Strike at 13 01'01.60" N, 44 53'19.87"E.
[240] Locally, the fighter is called Abu Soultan. The Panel cannot independently verify his allegiance.
[241] The Al Anand military base, controlled by the Yemen Armed Forces, was approximately 20 km from the house.
[242] Source: Google Earth. 24 October 2016.

Figure 49.B.2
Civilian house post-explosion[243]

Figure 49.B.3
Armed group suspect's house post-explosion

C. Technical analysis of physical evidence

4. Technical analysis of imagery of fragmentation recovered from the explosion at the civilian house demonstrates that:

(a) The explosive device was almost certainly fitted with a Paveway laser guidance unit. Such units are usually designed to be paired with Mark 82 high explosive aircraft bombs;

Figure 49.B.4
Post-explosion guidance fin from a Paveway laser guidance system

Figure 49.B.5
Post-explosion adapter flange from a Paveway laser guidance system

[243] Confidential sources. Imagery in this appendix was either provided to the Panel by the source or was verified as accurate by eyewitnesses.

Figure 49.B.6
CAGE Code 94271

(b) Post blast crater analysis determined that the size of the crater was almost certainly within the dimensional parameters for the detonation of 87kg of high explosives, which is the explosive weight of the Mark 82 variant high explosive aircraft bomb;

(c) The civilian house was almost certainly destroyed by a Mark 82 high explosive aircraft bomb fitted with a Paveway laser guidance system;

(d) The only military entity operating the type of aircraft in the area that has the capability to deliver high explosive ordnance of this type is the Saudi-led coalition.

D. Response of the Saudi Arabia-led coalition

5. The Panel has not yet received a response to a request for information made to the Saudi Arabia-led coalition.[244] The Governor of Lahj issued a statement in which he stated: "We know nothing about the attack. The coalition conducts attacks without informing us. The responsibility of this operation is on those who provide the coalition with the wrong coordinates".[245]

E. Analysis of violations of international humanitarian law (IHL)

6. In the absence of a response from the Saudi Arabia-led coalition, the Panel analyzed the applicable law in relation to this incident on the basis of its own independent investigations.[246] The Panel finds that based on the use of precision-guided weapons and repeated strikes the residential building was the intended target of the two air strikes.

---

[244] Letter dated 1 July 2016 and 21 November 2016.

[245] "'Human remains everywhere': Family of 11 killed in alleged Saudi coalition strike in Yemen" at https://www.rt.com/news/344445-saudi-coalition-family-killed/. See also "11 family members killed in Saudi airstrikes on Lahj" at https://www youtube.com/watch?v=-4HRndZslDI.

[246] See appendix E for sources of information. Open source information included https://www.rt.com/news/344445-saudi-coalition-family-killed/, "Yemeni officials: Airstrike kills 11 from same family" at http://bigstory.ap.org/article/e8c13a9fa4c34b5dbb2a803d0bf40a68/yemen-officials-say-strike-kills-6-1-family, "Bombing Businesses: Saudi Coalition Airstrikes on Yemen's Civilian Economic Structures" at http://reliefweb.int/report/yemen/bombing-businesses-saudi-coalition-airstrikes-yemen-s-civilian-economic-structures-enar, "Death toll from Saudi-led air raid on Yemen's Lahij soars to 11" at http://www.presstv.com/Detail/2016/05/26/467450/Saudiled-coalition-airstrike-civilians-fatalities-casualties-Mahala-Lahij-Nihm-Sanaa, and "11 family members killed in Saudi airstrikes on Lahi" at https://www.youtube.com/watch?v=-4HRndZslDI.

7. The Panel found no explanation in the public domain as why this civilian house, which is *prima facie* a civilian object immune from direct attack,[247] was considered by the Saudi Arabia-led coalition to be a legitimate military objective.[248] The Panel also found no demonstrable evidence that the occupants of the house, who as civilians were prima facie immune from attack, had lost their civilian protection.[249] IHL requires that the civilian population, as well as individual civilians, shall not be the object of attack.[250] An attack on civilians and civilian objects cannot also be justified on the basis of military necessity.[251] Any attack that does not distinguish between civilians and civilian objects with military objectives violates, amongst others, IHL principles relating to distinction.[252]

8. While the Panel is not convinced that the Saudi Arabia-led coalition directed its air strike against a legitimate military target, even if it had, the Panel finds that there are serious concerns whether it respected IHL principles of proportionality[253] and precautions in attack.[254] The second strike killed the head of the household as he attempted to rescue those injured, and it also further killed some of those civilians who were injured. The attack resulted in a disproportionately high number of deaths and injuries to women and children as demonstrated by the fact that eight of the nine individuals were women and children, and the total destruction of the residential building.[255] Any proportionality assessment[256] should have taken into consideration that the timing of the attack, in the early morning during Ramadan, was such that there was a high likelihood that the women and children will be in the house.

9. It is not clear if measures were taken that would have distinguished between the intended target(s) and other civilians. For example, if the target was the male occupant of the house, it is possible that then other measures could have been reasonably used to apprehend the suspect, given that the legitimate Government of Yemen was in control of the area and had ground presence.[257] The cumulative effect on civilians and the civilian object also demonstrates that if precautionary measures were taken, they were largely inadequate and ineffective.[258]

---

[247] IHL requires all parties to the conflict must at all times distinguish between civilian objects and military objectives and that attacks may only be directed against military objectives. See CIHLR 7 – 12.

[248] IHL states that "in so far as objects are concerned, military objectives are limited to those objects which by their nature, location, purpose or use make an effective contribution to military action and whose partial or total destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage". CIHLR 8.

[249] There was no evidence that indicated that the male occupant was a fighter or was otherwise participating in hostilities at the time of the attack. In Yemen, women do not generally engage in hostilities and the children, (the oldest male child is a 11-year old student at the local school), were highly unlikely to have been fighters or engaged in hostilities at the time of the air strikes. See Article 13 (1) and (2) of AP II relating to the protections afforded to civilians and Article 13 (3) on the loss of protection. See also CIHLR 1, 5 and 6.

[250] Article 13(2) of AP II. See also CIHLR 1.

[251] Prosecutor v Dario Kordic and Mario Cerkez (2005). Paragraph 54 at http://www.icty.org/x/cases/kordic_cerkez/acjug/en/corr050106.pdf.

[252] IHL permits attacks directed against combatants and military objectives, however, civilian objects and civilians are prima facie immune from attack. See Article 13 of AP II and CIHLR 1, 6, 7, and 10.

[253] See CIHLR 14. An attack is disproportionate if it "…may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated…". Those responsible for planning, deciding upon or executing attacks necessarily have to reach their decisions on the basis of their assessment of the information from all sources that is available to them at the relevant time. See further https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_rul_rule14#Fn_29_33.

[254] IHL requires that all feasible precautions must be taken to avoid, and in any event to minimize, incidental loss of civilian life, injury to civilians and damage to civilian objects. Article 13(1) of AP II. CIHLR 15. This obligation is particularly incumbent on those who plan and decide on the air strikes. See William Boothby, "The Law of Targeting", OUP (2012), p. 72. The specific obligations are further elaborated in CIHLR 16 – 20.

[255] It is highly unlikely that the women and children were participating in hostilities. The Panel has further images demonstrating the total destruction of the house.

[256] CIHLR 18.

[257] The Al Anad military base, controlled by the Yemen Armed Forces, is in the area.

[258] If precautionary measures were not taken, it is incumbent on the Saudi Arabia-led coalition to demonstrate why in those circumstances, such precautionary measures were not feasible.

F. Summary of findings

10. The Panel finds that:

(a) The Saudi Arabia-led coalition conducted air strikes on a civilian house in Al Mahala, Lahj on 25 May 2016 that resulted in deaths of six civilians and critically injured three others and destroyed the civilian house; and

(b) The Panel is not convinced that IHL principles in relation to distinction and/or proportionality were respected in this incident. If precautionary measures were taken, they were largely inadequate and ineffective.

Appendix C to Annex 49: Abs hospital, Abs, Hajjah (15 August 2016)

A. Introduction

1. This case study is the only one in which the Panel has investigated an air strike on a medical facility in Yemen.[259]

B. Background to events

2. At approximately 15:35 hours on 15 August 2016, an unarmed civilian car entered the Abs hospital carrying wounded individual(s). At approximately 15.40 hours explosive ordnance dropped from a military aircraft, detonated within the Abs hospital premises,[260] resulting in nineteen fatalities and 24 injured. The casualties included hospital workers, patients and other civilians.[261] The high number of civilian casualties was a result of the point of detonation being close to the emergency department and waiting hall for patients. The car that was used to transport an injured individual was also destroyed, and its occupants killed.

Figure 49.C.1
Location of the hospital

[259] This airstrike constituted the fifth attack on an MSF-supported medical service in Yemen in the past year. See MSF investigation report into the incident at http://www.msf.org/sites/msf.org/files/yemen_abs_investigation.pdf (hereinafter referred to as MSF investigation report). Of these, MSF attributes responsibility, for at least one other attack, on a mobile clinic in the Al Houban district in Tai'zz, on 2 December 2015, to the Saudi Arabia-led coalition. Crisis Info 8 – Yemen, MSF (December 22 2015) at https://lakareutangranser.se/sites/default/files/yemen_crisis_info_8_final.pdf. For the outcome of the JIAT investigation on this latter incident, see "Saudi investigation largely defends deadly air strikes in Yemen" at http://www.reuters.com/article/us-yemen-security-saudi-airstrikes-idUSKCN10F23J.

[260] 16°00'23.23"N, 43°11'40.47"E.

[261] MSF investigation report. This included nine children, five women and eleven hospital workers.

C. Technical analysis of physical evidence

3. Post blast crater analysis of imagery (figure 49.C.2) determined that the size of the crater was within the dimensional parameters for the detonation of 87 kg of high explosives.[262] This is the explosive weight of the Mark 82 variant high explosive (HE) aircraft (A/C) bomb. The crater profile is highly indicative of that typically caused by the detonation of a high explosive aircraft bomb on, or just below, the ground surface. The Panel thus finds that, a high explosive aircraft bomb with an explosive content of approximately 87 kg was the cause of the explosion.

Figure 49.C.2
Post blast crater[263]

4. Photogrammetry analysis of imagery of fragmentation taken at the scene determined that one fragment has the shape profile, and falls within the dimensional parameters, of a rear wing from a GBU-12 PAVEWAY II guidance unit (figure 49.C.3).

Figure 49.C.3
Probable GBU-12 PAVEWAY II guidance unit rear wing[264]

5. Explosives engineering analysis predicts that for an explosive device the size of a Mark 82 HE A/C bomb (net explosive content (NEC) of 87 kg) the blast overpressure will result in 99 per cent fatalities at a radius of up to 8.3

[262] Explosive Engineers Tool Box (EETB). Assumes initiation at a burial depth of 2m due to impact.
[263] Source: France 24 YouTube. This image has been verified as accurate by witnesses and has been crosschecked with other imagery provided to the Panel by witnesses.
[264] Source: Confidential.

metres from the point of detonation, with permanent hearing damage expected out to a radius of 42.4 metres.[265] Many more fatalities and injuries from fragmentation effects can be expected at far greater ranges, however.[266]

6. The only party to the conflict with the known capability to deliver the Mark 82 HE A/C bomb with the GBU-12 PAVEWAY II guidance unit is the Saudi Arabia-led coalition.

D. Response of the Saudi Arabia-led coalition

7. On 15 August 2016, the Saudi Arabia-led coalition acknowledged its responsibility for the air strike and stated to MSF that "the objective of the air strike was a moving vehicle that had entered the hospital compound".[267]

8. On 8 December 2016 JIAT provided the Panel with the following information:

> "Doctors without borders (MFS (sic)) posted a statement on its official website claiming that the coalition forces struck Abs-Hospital in Abs city, Hajjah Governorate, on 15 August 2016, resulted with (7) people dead, and (13) injured. The JIAT investigated the facts and the circumstances of this incident, and found out that on 15 August 2016 the coalition forces received intelligence information about presence of Houthi Leadership gathering northern Abs City, thus they were targeted and attacked by coalition Air Force. After that the aircrew observed that a vehicle leaving the site, and proceeding south. The fighters followed the vehicle, and struck it next to a building that does not bear any marks that would indicate before the strike that it is a hospital, which has appeared later that it is (Abs-Hospital). In light of the facts, the JIAT have found that, damages inflicted on the building were because of the targeted vehicle (which was a legitimate military target) next to the building which were unintentional. Thus, the JIAT have found that, the coalition forces must extend an apology for this unintentional mistake, and provide the proper assistance to the families with affected persons. The coalition forces must also investigate those responsible for that, to identify extent of their violation of the approved Rules Of Engagements (ROEs), and take the proper actions in this regard."

9. The Panel has not yet received a response to a request for information made to the Saudi Arabia-led coalition.[268]

E. Panel observations on JIAT's findings

10. In assessing the Saudi Arabia-led coalition's compliance with IHL, the Panel has given due consideration to the findings of the JIAT and media statements attributed to the coalition. The Panel highlights the fact that the Panel did not have access to the information that was at the disposal of the JIAT, despite requests for information from the Saudi Arabia-led coalition. The Panel will, therefore, base its IHL assessment on its own investigative findings.[269]

11. The Panel finds that the Saudi Arabia-led coalition should have been aware that the vehicle entered the Abs hospital, prior to the air strike. The Panel finds that the Saudi Arabia-led coalition was provided with the coordinates for the hospital on 11 July and 10 and 11 August 2016. The coordinates provided, 16°00'23.03" N 43°11'39.98" E, are the coordinates of the hospital.

---

[265] See C. N. Kingery and G. Bulmash, "Airblast parameters from TNT spherical air burst and hemispherical surface burst", Technical Report ARBRL-TR-0255 (Ballistics Research Laboratory, Aberdeen Proving Ground, Maryland, United States, April 1984). Assuming peak reflected pressure surface burst.

[266] The Panel does not yet have sufficient information to model this aspect of the warhead's capability with any degree of acceptable accuracy for this incident.

[267] MSF investigation report.

[268] Letter dated 21 November 2016.

[269] For Panel sources see appendix E.

12. The Panel also finds that even if there were no visible markings to indicate that this was a hospital, a fact that MSF disputes,[270] these distinctive emblems are only intended to facilitate identification and do not, by themselves, confer protected status.[271] Under IHL, medical personnel and objects are protected because of their function. The display of the emblems is merely a visible manifestation of that function.

F. Analysis of violations of IHL

1. Panel assessments on the targeted civilian vehicle

13. The Panel finds that the vehicle was highly likely the target of the air strike and that the vehicle was within hospital premises at the time it was targeted.[272] The use of a precision-guided munition is confirmation that the intended target was hit.

14. The Panel is not convinced that the "moving vehicle that entered the compound" was a legitimate military objective. The Panel's investigations revealed that the vehicle was a civilian car[273] transporting wounded individual(s) (those who were wounded possibly from a previous air strike elsewhere) to the hospital.[274] The Panel cannot conclusively state that the wounded in the vehicle was/were fighter/s or civilian/s.[275] Yet, this alone does not make the vehicle a legitimate military objective because those wounded, if they were fighters, had become *hors de combat*, and are protected from direct attack under IHL.[276]

15. Even if the civilian vehicle, for reasons only known to the commanders who decided on this attack, had become a military objective, the Panel is not convinced that the Saudi Arabia-led coalition forces, in carrying out the air strike on a hospital, met the relevant IHL principles relating to proportionality.[277] The Panel finds that it certainly did not meet the principles relating to precautions in attack, for reasons demonstrated below. If the vehicle was a target because it came from a battlefield, then it is questionable as to why the Saudi Arabia-led coalition did not target the vehicle during the 10 km it travelled to reach the hospital.[278]

2. Panel assessments on the attack on the hospital

16. The Panel finds that the hospital was protected from attack under IHL at the time of that attack, and there is no demonstrable evidence to indicate that the facility and medical personnel had lost their protected status under IHL.[279]

---

[270] MSF investigation report. See images at p.10 of MSF report.

[271] See commentary to CIHLR 30.

[272] JIAT statement, MSF statement, and panel sources.

[273] The Panel's investigations indicate that the vehicle was a Toyota Corolla car that was well known in that area to operate as a "taxi".

[274] a) Panel sources at the Abs hospital; and b) MSF stated that "The car was visually inspected at the gate by the hospital ER guard who reports that the people in the car wore civilian clothes and that there were no weapons visible inside the vehicle. At the triage area, the car was approached by MSF medical staff whom subsequently checked availability in ER, which was full, and afterwards went to the logistics room to bring out a mattress/stretcher to unload the wounded. At this precise moment – at 15.40 hours local time – the airstrike took place, making impact at the exact place where the vehicle had stopped". MSF investigation report, footnote 2, p 6.

[275] Sources informed the Panel that the passenger was an ice cream seller who was wounded in an air strike at another location.

[276] Common Article 3 to the Geneva Conventions (CA 3).

[277] CIHLR 14. The Panel requires further verifiable evidence from the coalition on its intended target to make the relevant analysis on proportionality. The Panel has requested, but not yet received, this information.

[278] Distance provided by MSF in its investigation report, p.6.

[279] A hospital can only lose its protected status when it is being used, outside its humanitarian functions, "to commit acts harmful to the enemy" (CIHLR 28) or "hostile acts" (Article 11(2) of AP II). The fact that the hospital treats, or has within its premises, wounded fighters does not result in a loss of protection for the hospital. CIHLR 28 and CA 3.

The Saudi Arabia-led coalition violated IHL principles relating to the special protections afforded to hospital.[280]

17. The Panel finds that the Saudi Arabia-led coalition also violated IHL principles relating to the protection of wounded and sick persons,[281] medical personnel,[282] persons hors de combat[283] and civilians[284] in this air strike. The air strike resulted in nineteen fatalities and 24 injured persons, who were either wounded or sick, medical personnel, or caregivers.

18. The JIAT statement demonstrates that the Saudi Arabia-led coalition did not consider the presence of, and impact on, the hospital or its occupants in its proportionality assessment undertaken prior to the air strikes. Any proportionality assessment should have considered, at least: 1) the high number of civilian casualties that may result from an attack on a functioning hospital; 2) impact on other protected persons, including the wounded, the sick, medical personnel, and hors de combat;[285] and 3) the special protection afforded to hospitals under IHL. Even if the Saudi Arabia-led coalition concluded, for reasons unknown to the Panel, that the vehicle was a legitimate military objective, the Panel is unconvinced that an air strike targeting the vehicle within the hospital premises would meet the requirements of proportionality.

19. The JIAT media statement demonstrates that the Saudi Arabia-led coalition did not comply with the strict IHL obligation to issue a warning prior to the attack.[286, 287] An attack could only have taken place after a reasonable time, when such warning has remained unheeded.[288] The Panel concludes that the Saudi Arabia-led coalition violated IHL principles relating to precautions in attack.

G. Summary of findings

20. The Panel finds that:

(a) The Saudi Arabia-led coalition conducted an air strike on the Abs hospital on 15 August 2016 that resulted in nineteen fatalities and 24 injured civilians, hors de combat, or medical personnel. The air strike also damaged the hospital and at least one civilian vehicle; and

(b) The attack violated several IHL principles, including those relating to respect and protection of on medical personnel and units, civilian objects, civilians, the wounded and sick, and *hors de combat*. It also violated IHL principles relating to precautions. The Panel is unconvinced that the Saudi Arabia-led coalition directed its attack against a legitimate military objective in this air strike and that it met the relevant principles of proportionality.

---

[280] The term "medical units" refers to establishments and other units and includes, for example, hospitals and other similar units, blood transfusion centres, preventive medicine centres and institutes, medical depots and the medical and pharmaceutical stores of such units. See CIHLR rule 28. See also Article 11 (1) of AP II.

[281] CA 3.

[282] MSF, in its investigation report, states that the air strike resulted in the death of 1 staff member, injured two Ministry of Health staff and three Ministry of Health volunteers. The Panel understands that some of these personnel were exclusively assigned to medical duties, and thus enjoyed special protection. Others were entitled to the protection afforded to civilians. See CIHLR rule 25.

[283] CA 3, CIHLR 47 (b).

[284] CA 3, CIHLR 1,5, and 6.

[285] MSF reports that, at the time of the air strike, there were 23 patients in surgery, 25 in the maternity ward, twelve in paediatrics and thirteen new-borns in Abs hospital. MSF investigation report.

[286] Article 11(2) of the AP II and CIHLR 28.

[287] MSF denies receiving any such warning, or any communication that would have constituted a warning prior to the attack. MSF investigative report, footnote 2, p 12.

[288] See CIHLR 28.

Appendix D to Annex 49: al-Sala al-Kubra community hall, Sana'a (8 October 2016)

A. Introduction

1. This case study is one of the two investigations done on air strikes affecting civilian gatherings.[289]

B. Background to the incident

2. On 8 October 2016, between 15:20 and 15:30 hours (local time) explosive ordnance detonated on, or in, the al-Sala al-Kubra community hall in a residential area of south-western Sana'a.[290] The venue was hosting at least 1000 mourners taking part in a funeral ceremony for Ali Al Rowayshan, the father of Major General Jalal Al Rowayshan, the acting minister of the interior under control of the Houthi-Saleh alliance. The UN reported that 132 civilians died and 695 were injured in this attack.[291]

Figure 49.D.1
Location of attack[292]

3. The al-Sala al Kubra community hall had a capacity of 1,000 to 2,000 individuals and attendance at the funeral was expected to be high. The timing of the attack also coincided with a time when the funeral was expected to receive the highest number of mourners.[293] Local custom requires attendance at a funeral as both a religious and a personal obligation. Hence, political and military leaders, and civilians, could not avoid attending the funeral, despite the potential security risks associated with such a gathering during the ongoing conflict.

4. Jalal Al-a's ministerial level position in the ministry of the interior under control of the Houthi-Saleh alliance, together with the Al Rowayshan family's prominent role in the Upper Khawlan tribe, meant that a high number of high-ranking political, military, and tribal guests were expected to attend the funeral. Although rumours of Former President Ali Abdullah Saleh (YEi.003) and his son, Khaled Ali Abdullah Saleh, attending the funeral turned out to be untrue, many current and former senior military officers of the Houthi and Saleh forces did attend the service. High profile public funerals, such as the one convened for Ali Al Rowayshan, are one of the few events in Yemen at which so many

[289] The other being the air strike on the Mustaba market at appendix A.
[290] 15°17'22.75"N, 44°12'02.60"E.
[291] Information provided by OHCHR to the Panel on 19 December 2016.
[292] Google Earth (3 October 2016).
[293] In Yemen, most mourners attend funerals between 14:30 – 17:30 hours.

key figures in the Houthi-Saleh alliance would gather in a single place. Had the attack killed or seriously injured more of the individuals identified by the Panel[294] then the Houthi-Saleh alliance would have been dealt a devastating political and military blow.

C. Technical analysis of physical evidence related to the incident[295]

5. The Panel has obtained and analysed post blast original imagery[296] of the available physical evidence and finds that:

(a) The damage was almost certainly caused by the detonation of at least two items of explosive ordnance (EO), each containing a significant[297] quantity of high explosive (HE). Such a quantity is normally contained in an aircraft bomb (figures 49.D.1 and 49.D.2);

(b) The two entry points (holes) (figures 49.D.3 and 49.D.4) were caused by the kinetic energy from aircraft bombs, which have hardened weapons grade steel cases. The aircraft bombs penetrated the structure of the concrete first floor before detonation inside the hall. Figure 49.D.3 shows the damage to the supporting pillars in the immediate vicinity of the blast, whilst the ones further away are relatively intact. This is a feature of both the designed strength of the concrete pillars that are designed to prevent a 'progressive collapse' in the event of the failure of any supporting pillars and the effects of an explosion. Initially, close to an explosion, the shock wave will destroy material in its path, but this shock wave typically dissipates within metres to be replaced by the blast wave. This blast wave only has the power to deform material in its path before its energy dissipates to such a level that it will aerodynamically flow around objects. At fifteen metres from an explosion the blast wave pressure will have dissipated to approximately 90% of the original blast over pressure at the explosion point;

Figure 49.D.2
Post blast aerial image[298]

Figure 49.D.3
Post blast interior

[294] Information with Secretariat.
[295] Available as of 12 October 2016.
[296] Including from an investigation team visit on 8/9 October 2016.
[297] Over 50kg of high explosive. Improvised Explosive Devices (IED) also contain such large quantities of explosives, but there is no evidence that this was an IED attack.
[298] Source: ITV News UK, 9 October 2016. http://www.itv.com/news/2016-10-08/yemen-funeral-hall-saudi-arabia-airstrikes/.

Figure 49.D 4
Entry point EO1

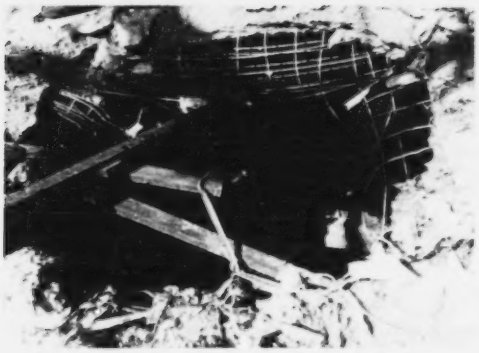
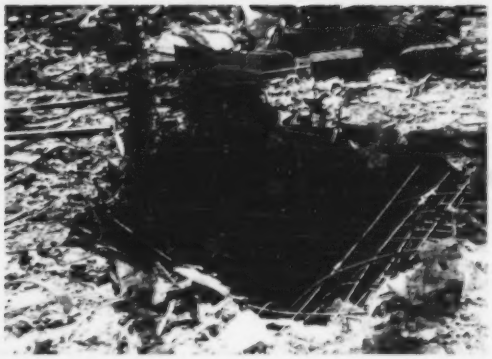


Figure 49.D.5
Entry point EO 2

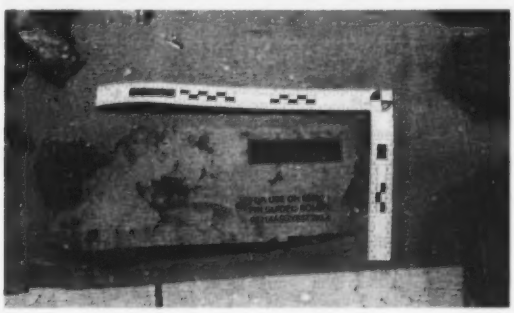


(c) The precision of the attack rules also out the use of free flight rockets as a possible attack profile. Evidence from eyewitnesses, who were present in the locality, report they heard aircraft prior to the second attack and stated that there was three to eight minutes between these two explosions. The timing between the explosions indicates the deliberate use of the "double tap" tactic, the consequences of which are that individuals responding to the first explosion are caught by the second (see in IHL section of the report);

(d) One fragment (figures 49.D.6 and 49.D.7) has the shape profile, and falls within the dimensional parameters, of a fragment of a fin from a GBU-12 PAVEWAY II guidance unit fitted to a Mark 82 HE aircraft bomb. It is also clearly marked as such;

Figure 49.D.6
GBU-12 PAVEWAY II guidance unit fin fragment in situ[299]

Figure 49.D.7
GBU-12 PAVEWAY II guidance unit Recovered and cleaned fin fragment



(e) One fragment has the shape profile, and falls within the dimensional parameters, of a fragment from the wing of a guidance unit for a HE aircraft bomb (figure 49.D.8 and 49.D.9).

[299] Confidential sources.

Figure 49.D.8
GBU-12 PAVEWAY II guidance unit wing fragment in situ[300]

Figure 49.D.9
GBU-12 PAVEWAY II guidance unit wing fragment in situ[301]

(f) Other fragmentation subsequently collected by an investigation team, also shows fragmentation that is certainly from the wing of a PAVEWAY-II guidance unit (figures 49.D.10 and 49.D.11); and

Figure 49.D.10
GBU-12 PAVEWAY II guidance unit wing fragment showing manufacturers CAGE code 3FU05 [302]

Figure 49.D.11
GBU-12 PAVEWAY II guidance unit wing fragment

[300] Source: Extracted from ITV News UK on 9 October 2016. http://www.itv.com/news/2016-10-08/yemen-funeral-hall-saudi-arabia-airstrikes/.
[301] Ibid.
[302] The Commercial and Government Entity (CAGE) Code is a unique identifier assigned to suppliers to various government or defence agencies. 3FU05 is assigned to the Karlee Company, a USA metal fabricator. Source: Confidential – a visitor to the crime scene.

(g) Video imagery taken on a cell phone and posted on social media allegedly shows one of the explosions. Slow motion analysis of this imagery shows an aerial device falling onto the al-Sala al-Kubra community hall immediately prior to the second explosion. The Panel is still investigating the veracity of this imagery.

6. The only party to the conflict with the known capability to deliver the Mark 82 HE aircraft bomb with the GBU-12 PAVEWAY II guidance unit is the Saudi Arabia-led coalition, which has air supremacy over Yemen.

D. Response of the Saudi Arabia-led Coalition

7. The Saudi Arabia-led coalition itself has not fully clarified its role in the incident.[303] The Joint Incident Assessment Team (JIAT), based on its initial investigations, attributed the responsibility to the Saudi Arabia-led coalition.[304] The Saudi Arabia-led coalition did not provide a response to a Panel request for information on this air strike.[305] The Government of Yemen provided the following information to the Panel on 31 December 2016:

> "According to media reports there have been more than a hundred dead and hundreds injured. The President has ordered the creation of a commission for investigation to join the JIAT of the coalition. It comprises of the head of PSO, the chief of military intelligence, and the chief of military justice. The aim is to demonstrate the Government's responsibility and to punish those individuals who caused the incident. Three individuals have been arrested for investigations within the coalition. As soon as the result of the investigation is known legal measures will be taken."

E. Analysis of violations of international humanitarian law (IHL)

8. The Panel finds that immediately preceding and during the air strikes, hundreds of civilians, including children, were in the al-Sala al-Kubra community hall attending the funeral wake[306] as were military personnel belonging to the Houthi-Saleh alliance.[307] [308] IHL obliges the party conducting attacks to respect in particular the principles of distinction, proportionality, and precautions in attack.

9. In the absence of a response from the Saudi Arabia-led coalition to the Panel, the Panel bases its IHL assessment on its own investigative findings as set out in the sections below.[309] [310]

---

[303] See letter from the Saudi Arabia-led coalition to the Chairman of the Security Council on 9 October 2016, (Saudi Arabia referenced UN/2016/750). Copy of document with Panel.

[304] https://www.justsecurity.org/33615/full-text-saudi-led-coalitions-statement-explanation-funeral-hall-bombing-yemen/.

[305] Panel letter of 21 November 2016.

[306] IHL permits attacks directed against combatants, however, those enjoying civilian protection may not be directly targeted. See Article 13 of AP II, Common Article 3 to the Geneva Conventions, and Rule 1 of the ICRC Study.

[307] Houthi or Saleh military personnel are legitimate military targets. The fact that they were amongst civilians would not have rendered them immune from attack. Similarly, those civilians who are protected from attack under IHL would not lose their protection from direct attack, because of the military presence.

[308] For the purpose of this report, the Panel considers military personnel as those individuals who are fighters on behalf of the Houthi or Saleh alliance. Individuals otherwise associated with a party to a conflict, for example, in the capacity of party members or political leaders, are entitled to civilian protection, unless they were also simultaneously regular fighters/combatants or unless and for such time when they directly participate in hostilities. See generally, A.13 of AP II, Common Article 3 to the Geneva Conventions and customary IHL.

[309] See appendix E for Panel sources.

[310] IHL principles relating to proportionality prohibits the launching of an attack "which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated". See CIHLR 14, which reflects Articles 51 (5) (b) and 57 of AP I to the Geneva Conventions.

F. Responsibility of the Saudi Arabia-led coalition for the air strike

10. The JIAT preliminary findings were that the attack was based on "wrong information" provided by the Yemeni government in Riyadh, and that the relevant rules of engagement and procedure was not followed,[311] and that those responsible "did not take in account the nature of the targeted area". The Panel notes that JIAT places the responsibility for the strike on the Yemeni party that provided it with information on the military target and the Air Operations Centre (AOC) in Yemen that ordered the attack.[312] It was also reported in the media that "Riyadh had ordered against the attack" and that it was a deliberate error by an individual who made "a choice made to breach operation procedures".[313] The Panel has not received further information, as had been requested, on the identity information of this individual, his role in the incident, and measures taken pursuant to this finding of individual liability.

11. Even if an individual officer within the Saudi Arabia-led coalition acted negligently in carrying out the strike, the member States of the Saudi Arabia-led coalition are still responsible for any violations relating to IHL regarding any failure on their part to undertake the requisite detailed assessments relating to proportionality and precautions in attack and their failure to ensure that relevant precautions were taken to minimize the effects on civilians as a result of the air strikes.[314] The fact that an official acted beyond their powers is not an adequate justification under international law for the relevant member States of the coalition to evade State responsibility for those wrongful acts.[315]

G. Relevant Principles under IHL

12. Based on the JIAT statement, it appears that the AOC in Yemen directed an on-call close air support mission to target the location, and a Saudi Arabia-led coalition aircraft in the area carried out the mission. The pilot of the aircraft thus did not have the benefit of pre-mission preparation and target analysis, and had to rely totally on any assessments made by the AOC.

13. The Panel finds that on the basis of the Saudi Arabia-led coalition's assessment of the information from all sources that were available to them at the relevant time,[316] the AOC could reasonably be expected to conclude that: 1) there would be a significantly high number of civilians, including children, at the venue; and consequently 2) any air strike would result in a high number of civilian casualties.

14. Any proportionality assessment should have taken into consideration: 1) that the hall was crowded because of a civilian funeral; 2) the funeral was open to the public; 3) the large capacity of the hall that allows a large number of individuals to be accommodated; 4) the high prominence of the family within the Yemeni society meant that many would congregate to pay respects; 5) religious and traditional practices associated with attendance at funerals making

[311] In paragraph 2 of a letter to the Chairman of the Security Council on 9 October 2016, (Saudi Arabia referenced UN/2016/750), Saudi Arabia states that "its forces follow strict and clear rules of engagement which prohibits the targeting of civilians and civilian objects and take all possible measures to prevent dangers to civilians".

[312] JIAT statement with Panel.

[313] http://www.telegraph.co.uk/news/2016/10/19/saudi-coalition-bombing-of-yemen-funeral-was-a-deliberate-error/.

[314] See also a relevant assessment on individual and state responsibility for this strike at https://www.justsecurity.org/33872/responsible-yemen-funeral-bombing-how/.

[315] See Articles on the Responsibility of States for Wrongful Acts at http://legal.un.org/ilc/texts/instruments/english/draft_articles/9_6_2001.pdf. See Article 7 which states: "The conduct of an organ of a State or of a person or entity empowered to exercise elements of the governmental authority shall be considered an act of the State under international law if the organ, person or entity acts in that capacity, even if it exceeds its authority or contravenes instructions." See also Customary IHL rule 139 which states: "Each party to the conflict must respect and ensure respect for international humanitarian law by *its armed forces* and other persons or *groups acting in fact on its instructions, or under its direction or control*". (Emphasis added).

[316] See commentary to CIHLR 14 and the United States Department of Defense Law of War Manual (2015), p.1033, which requires combatants to assess in good faith the information that is available to them, when conducting attacks. Also see the United Kingdom position at https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/Notification.xsp?action=openDocument&documentId=0A9E03F0F2EE757CC1256402003FB6D2. Accessed on 10 October 2016.

attendance obligatory for both civilians and military commanders; 6) the near certain presence of children the funeral; 7) the peak times when mourners attend funerals; and consequently 8) that any attack in that location, and at that time, may result in a high number of civilian casualties. This information, and the fact that a funeral was being held at al Saba al-Kubra hall for the father of Major General Jalal Al Rowayshan was readily available in the public domain, and accessible to the Saudi Arabia-led coalition prior to the attack.[317]

15. The attack resulted in a disproportionately high numbers of civilian casualties, when compared to military casualties, and this could have been anticipated prior to the attack.[318] Even if the military advantage the Saudi Arabia-led coalition sought to achieve by this attack is to be assessed in the context of a full war strategy,[319] based on the information received, the Panel is not convinced that the relevant IHL requirements on proportionality were met;[320]

(a) IHL requires that military commanders and those responsible for planning and executing decisions regarding attacks take all feasible precautions to avoid, and in any event to minimize, incidental loss of civilian life, injury to civilians and damage to civilian objects.[321] IHL also imposes an obligation on parties to the conflict to cancel or suspend an attack, if it becomes clear that its attack is likely to cause excessive civilian damage;[322]

(b) In the absence of a response from the Saudi Arabia-led coalition, the Panel is unaware of: 1) any effective advance precautionary measures taken by the Saudi Arabia-led coalition in the planning of these airstrikes; or 2) any actions taken during the flight mission, to minimize civilian casualties or damage to civilian objects. Instead the cumulative factors surrounding the attack resulted in a high number of civilian causalities; and

(c) The second air strike, which occurred three to eight minutes after the first air strike, almost certainly resulted in more casualties to the already wounded and the first responders.[323] These first responders included civilians who immediately entered the area after the first air strike to provide urgent first aid and undertake casualty evacuation.[324] The Panel has identified prior use of this "double-tap" tactic before in two[325] of its IHL investigations. [326] IHL prohibits attacks against *hors de combat*[327] and the wounded.[328] The Panel is not convinced that the Saudi Arabia-led coalition respected its obligations in respect of persons *hors de combat* and the wounded in this "double tap" attack, and if it took

[317] For example, the Facebook social media post of a family member, https://www.facebook.com/jalal.ali.161/posts/1481350905225458, which gives information as to the date and place of the funeral. Accessed on 10 October 2016.

[318] Confidential sources.

[319] United States Department of Defense Law of War Manual (2015), p. 246.

[320] In the Galic Trial Judgement (2003), the International Criminal Tribunal for Former Yugoslavia held in respect of a shelling at a football tournament that "Although the number of soldiers present at the game was significant, an attack on a crowd of approximately 200 people, including numerous children, would clearly be expected to cause incidental loss of life and injuries to civilians excessive in relation to the direct and concrete military advantage anticipated". See http://www.icty.org/x/cases/galic/tjug/en/gal-tj031205e.pdf.

[321] See Article 13(1) of AP II and Rules 15 and 18 of the ICRC Customary Study.

[322] CIHLR 19. The United Kingdom takes the position that this obligation applies to those "...those who have the authority and practical possibility to cancel or suspend the attack" (see the United Kingdom's reservations and declarations made upon ratification of AP I at https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/Notification.xsp?action=openDocument&documentId=0A9E03F0F2EE757CC1256402003FB6D2. Accessed on 10 October 2016.

[323] Confidential source.

[324] Confidential sources.

[325] 1) Attack on a civilian house in Lahj (25 May 2016) (EO Strike 1 at 13 01'01.4" N 44 53'20.7"E, EO Strike 2, 13 01'01.9"N, 44 53'20.2"E); and 2) Mastaba market attack (15 March 2016) (EO Strike 1, 16°13'39.31"N, 43°14'42.04"E; EO Strike 2, 16°13'40.61"N, 43°14'41.08"E;). The Panel concluded that both these attacks were conducted in violation of IHL.

[326] For a clearer understanding of assessments on IHL violations associated with the "double tap" attacks, see Clapham et al, "1949 Geneva Conventions: A Commentary", Oxford University Press (2016), p. 786.

[327] Including Common Articles 1 and 3 to the Geneva Conventions.

[328] Ibid.

effective precautionary measures to minimize harm to civilians, including the first responders, in the second strike. The Panel continues to welcome information from the Saudi Arabia-led coalition on what measures it took to minimize civilian deaths and injuries and damage to civilian objects and, if measures were taken, then to provide information on how those measures contributed to the above objective.

16. The Panel notes that this is the second investigation, in which mass civilian casualties were reported,[329] where the Saudi Arabia-led coalition reportedly relied exclusively on information obtained from the Yemeni authorities in Riyadh on the identification nature of the target.

I. Summary of findings

17. The Panel finds that:

(a) The Saudi Arabia-led coalition conducted the air strike on the community hall in Sana'a that resulted in at least 827 civilian fatalities and injuries. At least 24 injured were children.[330] The air strike also resulted in the total destruction of the community hall;

(b) Given the nature of the event and those in attendance, the attack the attack resulted in a very high number of civilian casualties and this should have been anticipated prior to the attack. The Panel is unconvinced that the relevant IHL requirements relating to proportionality were met;

(c) These cumulative factors indicate that if precautionary measures had been taken, they were largely inadequate and ineffective. The JIAT also concluded that the relevant rules of engagement and procedures were not followed, and that those responsible in the Saudi Arabia-led coalition "did not take in account the nature of the targeted area";

(d) The second air strike, which occurred three to eight minutes after the first air strike, resulted in more casualties to the already wounded civilians and to the first responders. The Saudi Arabia-led coalition violated its obligations in respect of persons *hors de combat* and the wounded in what was effectively a "double tap" attack probably caused by the tactics adopted by the pilots to guarantee destruction of the target;

(e) Even if an individual officer within the Saudi Arabia-led coalition acted negligently in carrying out the strike, coalition forces are still responsible for the appropriate IHL violations. Under wider international law, the fact that an official acted against instructions is not an adequate justification under wider international law for the relevant member States of the coalition to evade State responsibility for those wrongful acts; and

(f) Those officers of the Government of Yemen that reportedly passed the information, or who were otherwise involved in the intelligence gathering and targeting assessment processes in relation to this incident, may also be responsible for any IHL violations to the extent of their contribution.

[329] The first being the air strikes on the al Khamees market in Mastaba, Hajjah on 15 March 2016.
[330] OHCHR verified data.

Appendix E to Annex 49: Summary of IHL case study evidence levels (air attacks against civilians)

1. This annex is a summary of the evidential levels used for each of the case studies that in the preceding appendices. It has been consolidated into one table in order to prevent needless repetition.

Table 49.E.1
IHL case study evidential levels

Ser	*Location*	*Panel interviews*[331]	*Photograph*[332]	*Video*	*Satellite*	*Documents*[333]	*Open source*[334]
1	Al Khamees Market, Mastaba	8	✓	✓	✓	• Investigation reports of 2 NGOs • JIAT report summary • Investigation report of IO • JIAT summary • Coalition statement (media)	> 5 x media reports
2	Civilian House, T'baisha	4	✓		✓	• IO confidential report • Document issued by ministry of justice • Death certificate	
3	Civilian House, Lahj	6	✓	✓	✓	• IO confidential report • Death certificates • Burial certificates	1 x Media video > 5 x media reports 1 Statement Governor of Lahj
4	Water Plant, Lahj	11	✓		✓	• HRW report (978-1-6231-33757)	2 x Media reports
5	Snack Factory, Sana'a	7	✓	✓	✓	• IO confidential report • 5 Reports by factory owners • Death certificates • JIAT report summary	> 5 x media reports
6	Abs Hospital, Abs	7	✓	✓	✓	• MSF Report (27/09/16) • Amnesty Report (19/09/16) • JIAT Report Summary • Other confidential documents	> 5 x Media reports

[331] This includes interviews with eyewitnesses, victims, direct reports, NGOs, INGOs, IOs and others who independently investigated the incidents.
[332] The Panel has retained all of the imagery used to make these determinations and it is available to Member States on request. All imagery was either direct from a source, or verified as accurate by eyewitnesses.
[333] Investigation reports are confidential documents that cannot be shared outside the Panel unless with the written consent of the said organization and for the specific purposes for which the consent was given.
[334] The Panel has retained copies of all open source reports used and these are available to Member States on request.

Ser	*Location*	*Panel interviews*[331]	*Photograph*[332]	*Video*	*Satellite*	*Documents*[333]	*Open source*[334]
7	Alsonidar Factory, Sana'a (1)	5	✓	✓	✓	• Chamber of Commerce Letter (14/09/16) • Caprari Group Letter (07/10/16) • Addar Fer, Italy Letter (07/1016) • Operational Manuals	4 x Media reports
8	Civilian House, Ibb	7	✓	✓	✓	• Death Certificates	4 x Media reports
9	Alsonidar Factory, Sana'a (2)	5	✓	✓	✓	• Chamber of Commerce Letter (2016) • Caprari Group Letter (07/10/16) • Addar Fer, Italy Letter (07/1016) • Operational Manuals	4 x Media reports
10	Community Hall, Sana'a	>10	✓	✓	✓	JIAT report summary	>10 x Media Reports

Annex 50: Case file summaries of investigations of a particularly sensitive nature

(STRICTLY CONFIDENTIAL)

Appendix A to Annex 50: Torture and cruel, inhuman, and degrading treatment of a child

(STRICTLY CONFIDENTIAL)

Appendix B to Annex 50: Deprivation of liberty relating a university student

(STRICTLY CONFIDENTIAL)

Annex 51: Use of explosive ordnance in civilian populated areas

1. This annex contains appendices relating to one investigation undertaken by the Panel, as an illustration, on explosions in densely populated areas, where the use of explosive ordnance (EO) is attributed to the Houthi or Saleh forces operating in Tai'zz.[335] In these six incidents, of which four certainly involved explosive ordnance, the Panel documented fifteen deaths and twenty injuries to civilians in five of the six incidents. In the sixth incident, MSF records twelve deaths and 122 injured in relation to the multiple EO that impacted on Tai'zz city on 3 June 2016.[336]

2. In addition, from January to June 2016, the Panel documented of 30 incidents in which the use of land based explosive ordnance were used in densely populated areas in Tai'zz, representing potential indiscriminate attacks against civilians.[337] There were over 60 civilian fatalities and over 180 civilians injured. The Panel did not continue this analysis due to the sheer volume of incidents received and its inability to independently verify each case.

3. Summaries of the six incidents investigated by the Panel, and contained in this annex, are as follows:

Table 51.1
Summary of IHL case levels

Ser	*Date (2016)*	*Impact location*	*Violation summary*	*Origin of EO*	*Civilian fatalities*	*Civilians injured*	*Remarks*
1	3 Jun	Bab Al-Kabeer	Explosion	East Ta'izz	12	122	A majority were women and children. Impacted on commercial buildings
2	3 Jun	Jamal Street (Delux Market)	Explosion	East Ta'izz	-	2	Impacted on commercial buildings.
3	7 Jun	Shamai, near the Revolution hospital	Explosion	East Ta'izz	5	-	Impacted on a school. The dead included four displaced women and children from a marginalized community.
4	18 Sep	Revolution hospital	1 x EO	East Ta'izz	-	-	Affected solar panels and water storage.
5	3 Oct	Market area in Bir Basha	2 x mortars	East Ta'izz	10	17	Twelve were children and women
6	15 Nov	House, Shamseen Neighbourhood.	1 x mortar	East Ta'izz	-	1 (child)	Damage to residential house. Heavily populated residential area.

[335] The other summaries are available with the Secretariat in Panel records.
[336] "Hospitals supported by charity received 134 casualties in one day: MSF" at http://www.reuters.com/article/us-yemen-security-taiz-idUSKCN0YS25B and http://www.doctorswithoutborders.org/article/msf-supported-hospitals-taiz-receive-122-war-wounded-one-day. There were several EO that impacted the city on 3 June 2016. All of these EO are attributed to Houthi/Saleh forces in Tabat Al Sofitel region. See "MSF-Supported Hospitals in Ta'izz Receive 122 War Wounded in One Day" at http://www.un.org/apps/news/story.asp?NewsID=54192#.WDAgTTakbOg and http://www.reuters.com/article/us-yemen-security-taiz-idUSKCN0YS25B.
[337] Information with the Secretariat in Panel records.

Appendix A to Annex 51: EO in Jamal Street, Tai'zz (3 June 2016).

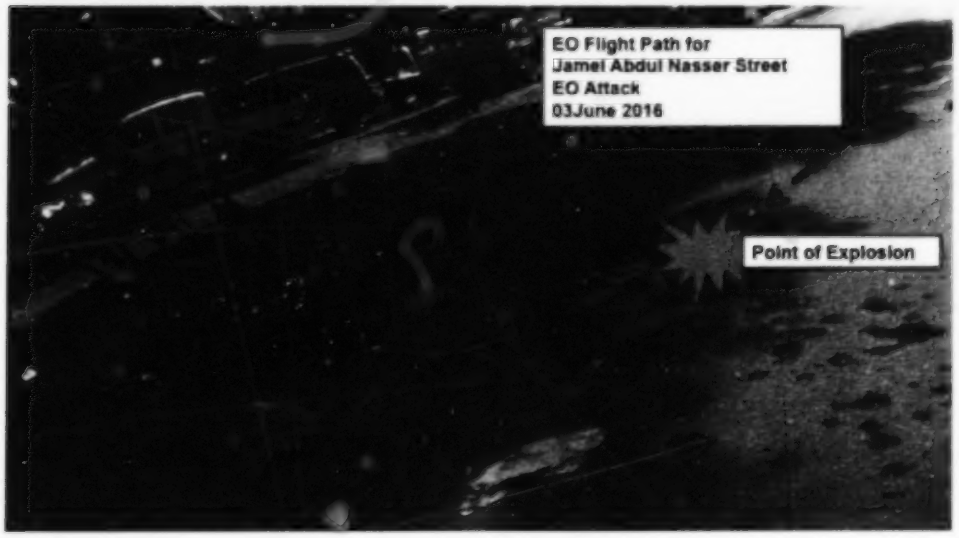
A. Background

1. At approximately 20:00 hours on 3 June 2016, an item of explosive ordnance detonated in the middle of Jamal Abdul Nasser Street, Ta'izz.[338] Blast and fragmentation from the explosion damaged nearby buildings and injured, at least, two civilians. There were no military personnel or equipment reported in the vicinity immediately prior to or at the time of the attack. Locals stated that the missile came from the direction of the Sofitel Hill. This area is under the control of the Houthi or Saleh forces.

B. Technical analysis

2. Based on the distinctive fragmentation pattern (figure 51.A.1), it is highly probable that the explosive ordnance used in this attack was the warhead of a free flight rocket. The fragmentation pattern of the detonation is almost certainly from a warhead impacting at low angle, which eliminates a mortar bomb as the cause. The absence of a small crater, and low angle of delivery, virtually eliminates an artillery shell as the cause.

Figure 51.A.1
Warhead detonation in Jamal Abdul Nasser Street[339]

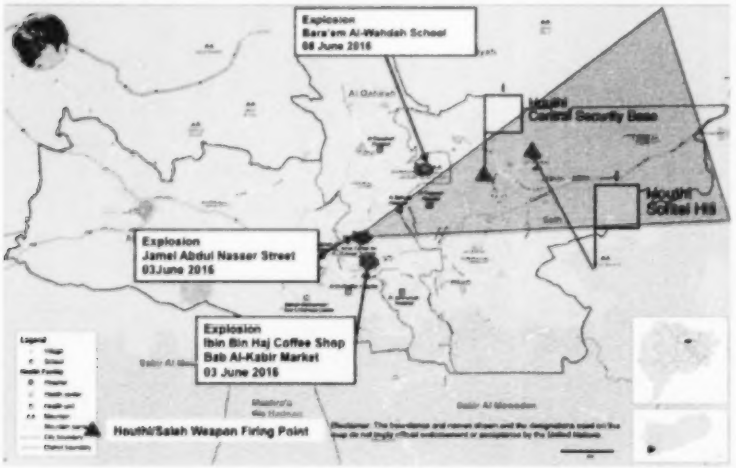


3. The Houthi-Saleh forces are operating at least one BM-21 variant multi-barrel rocket launcher (MBRL) in Ta'izz.[340] It is highly probable, based on the likely flight path (figures 51.A.2 and 51.A.3) and reports of Houthi-Saleh forces in that area on the day that this weapon system was located in the region of Sofitel Hill, which is well within the range of Jamal Abdul Nasser Street.

[338] 13° 34' 39.28"N, 44° 00' 43.49"E.
[339] Photograph taken by witness for the Panel.
[340] Confidential sources.

Figure 51.A.2
Maps showing orientation of street to direction of probable launch area [341]

Figure 51.A.3
Maps showing probable launch area [342]



[341] Higher resolution copies of the map are available from the Secretariat.
[342] Ibid.

C. Analysis of violations of IHL

4. Based on information available, the Panel finds it is highly likely that the responsibility lies with the Saleh forces operating from the region of the Sofitel Hill.

5. The Panel is not convinced that the IHL requirements of distinction,[343] proportionality,[344] and precautions in attack[345] were met as demonstrated by the following factual elements:

(a) The street was near a market and a populated commercial area. The attack injured at least two civilians and partially damaged buildings in the vicinity;

(b) The civilian street was a civilian object prima facie immune from attack.[346] Civilians are also immune from attack unless and until such time when they directly participate in hostilities.[347] IHL requires that attacks be directed against legitimate military objectives.[348] The Panel could not identify any legitimate military objective.

(c) It is highly likely that Saleh fighters knew that any explosive ordinance launched into a populated street would have a high likelihood of civilian casualties and damage to civilian objects. Since the blast-and-fragmentation zone is based on the technical specification of the explosive weapon in question, its likely impact on civilians is often foreseeable;[349]

(d) If precautionary measures were taken, they were inadequate and ineffective in these circumstances.

6. The Panel requested, but did not receive a response from the Houthi or Saleh forces, information related to in this incident.

---

[343] CIHLR 1 and 7.
[344] CIHLR 14 and 18.
[345] CIHLR 15 - 22.
[346] CIHLR 7 and 9.
[347] CIHLR 6.
[348] CIHLR 8.
[349] OCHA Report "Protecting Civilians from the Use of Explosive Weapons in Populated Areas" at https://docs.unocha.org/sites/dms/Documents/EWIPA Fact Sheet - Latest.pdf.

Appendix B to Annex 51: Summary of IHL case study evidence levels

1. This annex is a summary of the evidential levels for each of the case studies that in the preceding appendices.

Table 51.B.1
Summary of IHL case levels

Ser	*Location*	*Panel interviews*[350]	*Photograph*[351]	*Video*	*Satellite*	*Documents*[352]	*Open source*[353]
1	Market, Jamal Street	5	✓		✓	• 2 investigation reports • Medical certificate	-
2	Market, Bab al Kabir	8	✓	✓		• IO confidential report • 2 investigation reports	
3	School, Shami neighbourhood	5	✓		✓	• Death certificates • Criminal investigation report • 3 investigation reports	> 5 x media reports
4	Revolution hospital	2	✓		✓	• Statement issued by hospital	-
5	Market, Bir Basha	7	✓	✓	✓	• IO confidential report • 1 investigative report • Death certificates	> 5 x media reports
6	Residential building, Shamseen neighbourhood	2	✓		✓	• Medical report • Independent NGO investigation	-

[350] This includes interviews with eyewitnesses, victims, direct reports, NGOs, INGOs, IOs and others who independently investigated the incidents.
[351] The Panel has retained all of the imagery used to make these determinations and it is available to Member States on request. All imagery was either direct from a source, or verified as accurate by eyewitnesses.
[352] Documents provided to the Panel will not be further shared unless the Panel receives expressed written consent of those sources.
[353] The Panel has retained copies of all open source reports used and these are available to Member States on request.

Annex 52: Attacks against hospitals

A. Attacks using explosive ordnance, threats or violence

1. In 2016, three hospitals provided Panel with information relating to nineteen incidents, where violence was threatened or used against the hospital and its staff. (table 52.A.1). This includes: 1) attacks by the use of explosive ordnance (EO); 2) attacks on and abductions of medical personnel; and 3) the use of hospital premises to launch attacks. The Panel finds, based on its investigations that all parties to the conflict; the Saudi Arabia-led coalition, the Houthi-Saleh military alliance, and forces associated with the Government of Yemen committed or contributed to violations against hospitals.

Table 52.A.1
Summary of incidents[354]

Ser	*Date (2016)*	*Impact location*	*Violation summary*	*Reported origin of EO (where relevant)*[355]	*Reported perpetrator*[356]	*Remarks*
1	3 Feb	Republican hospital, Taizz	1 x EO		Likely to be Houthi or Saleh forces based on conflict dynamics.[357]	Damaged maternity ward
2	15 Mar	Republican hospital, Taizz	1 x EO		Likely to be Houthi or Saleh forces based on conflict dynamics.	Heavy damage to Cardiac ward and equipment.
3	20 Mar	Revolution hospital, Ta'izz	Threats Abductions		Confidential Annex	See annex 53.
4	11 Jun	Revolution hospital, Ta'izz	2 x EO	Al-Salal area	Houthi or Saleh forces	Damaged burns unit and doctors accommodation
5	17 Jun	Revolution hospital, Ta'izz	2 x EO	Al Harir area	Houthi or Saleh forces	Damaged internal medicine unit
6	11 Jul	Republican hospital, Ta'izz	1 x EO		Likely to be Houthi or Saleh forces based on conflict dynamics.	Damaged woman's surgical ward
7	15 Aug	Abs hospital	1 x Paveway II	NA	Saudi Arabia-led coalition	(see annex 53)

[354] Information was collected from witnesses and independent investigators. Multiple images on the effects on each of the above hospitals as a result of these EO are with the Secretariat and available for examination by member States.
[355] Information provided by confidential sources.
[356] Ibid.
[357] "Conflict dynamics" takes into consideration the front lines as it relates to the Houthi and Saleh military forces and the forces affiliated with the legitimate government. It also considers who was in control of the area where the violation occurred.

Ser	*Date (2016)*	*Impact location*	*Violation summary*	*Reported origin of EO (where relevant)*[355]	*Reported perpetrator*[356]	*Remarks*
8	7 Sep	Republican hospital, Ta'izz	23mm		Unknown.	Impacted on the woman's surgical ward
9	28 Sep	Revolution hospital, Ta'izz	1 x EO		Likely to be Houthi or Saleh forces based on conflict dynamics.	Solar panels and water storage unit damaged.
10	26 Oct	Name of hospital withheld to protect sources.	Unknown EO were launched from the hospital yard	Hospital	Confidential annex	See annex 53.
11	1 Nov	Republican hospital, Ta'izz	1 x EO		Likely to be Houthi or Saleh forces based on conflict dynamics.	Storage unit and water tanks that belonged to operations ward damaged (see annex 53).
12	3 Nov	Republican hospital, Ta'izz	1 x EO		Likely to be Houthi or Saleh forces based on conflict dynamics.	Impacted around the cardiac ward (damaged only on the outside)
13	4 Nov	Republican hospital, Ta'izz	1 x EO		Likely to be Houthi or Saleh forces based on conflict dynamics.	Destroyed windows and damaged cardiac ward.
14	5 Nov	Republican hospital, Ta'izz	Sniping		Unknown.	Sniping in the hospital yard
15	7 Nov	Republican hospital, Ta'izz	1 x EO		Likely to be Houthi or Saleh forces based on conflict dynamics.	EO damaged ceiling of cardiac ward.
16	21 Nov	Revolution hospital, Ta'izz	Threats. Disruption of functions		Ibrahim Al Qaisi. Confidential annex	Only the emergency section was operational. Threatened hospital staff. Disrupted a meeting on funding. Hospital stopped functions because of dear of safety of staff. See annex 53.

Ser	Date (2016)	Impact location	Violation summary	Reported origin of EO (where relevant)[355]	Reported perpetrator[356]	Remarks
17	21 Nov	Military hospital, Tai'zz	Multiple EO around the hospital		Likely to be Houthi or Saleh forces based on conflict dynamics.	In early Nov the hospital was retaken by the popular resistance. Previously, it was used by the Houthi/Saleh forces and civilians with renal diseases. The shelling allegedly began after the transfer of the hospital to the popular resistance.
18	4 Dec	Revolution hospital, Tai'zz	1 x EO	Al Salal Hill	Likely to be Houthi or Saleh forces	Damaged doctor's accommodation,
19	XX Dec	Confidential annex	Armed men threatens hospital staff unless medical care is provided.		Investigations ongoing	See annex 53.

2. The panel also received information from OHCHR that they recorded 8 attacks on hospitals by Houthi or Saleh forces and 16 air strikes against hospitals in 2016.[358]

3. The three incidents relating to attacks on hospital staff are included in a confidential annex because of credible threats to the safety of hospital staff. These incidents violate various IHL principles, including those that ensure that medical staff and units are protected from direct attack[359] and that the wounded and sick are cared for.[360] IHL also prohibits the punishment of a person for performing medical duties compatible with medical ethics.[361] It is prohibited to compel a person engaged in medical activities to perform acts contrary to medical ethics.[362] The abduction and detention of medical staff also violates several principles of IHL and may, depending on the circumstances, amount to hostage taking.[363]

B. Potential future threats to hospitals

4. The Panel received information from three hospitals that they have not been provided with operating costs since around July 2016. The Central Bank of Yemen (CBY) issued a notice on 6 November 2016 stating that the salaries of government officials, including medical staff, will be cut by 50% backdated to August 2016.[364] The Panel spoke to seven doctors across Yemen in November, who confirmed they still had not received their salaries since August, or had received 50% of their August salary in November. The Panel notes that the lack of resources may have a direct impact on the functioning of hospitals:

[358] Information provided to the Panel on 19 December 2016.
[359] Common Article 3 to the Geneva Conventions of 1949, CIHLR 25, 28, 35.
[360] Common Article 3 to the Geneva Conventions of 1949, CIHLR 110,111.
[361] CIHLR 27.
[362] CIHLR 27.
[363] Hostage taking is prohibited under IHL CIHLR 96.
[364] A copy of the statement issued by the Central Bank is on record with the Panel.

(a) On 1 November 2016, the Revolution hospital issued a statement that stated that: 1) it had not received funds allocated in the budget for the 3rd quarter of 2016 from the CBY; 2) it had not received funds for staff salaries for the 4th quarter of 2016; 3) that while the emergency section was supported by MSF, other units had no external funding; and 4) warned that it may be compelled to stop its functions. The hospital has treated approximately 40,000 war injured civilians and wounded fighters since the beginning of the conflict.[365]

(b) On 31 October 2016, the Republican hospital circulated a similar statement on social media, warning of an imminent shut down of the hospital due to 1) lack of funding for hospital and staff; and 2) its inability to receive humanitarian aid because of obstructions posed by armed groups.[366]

5. The Panel also finds that finds that insufficient levels of funding, worsened by further recent reductions in salaries, have direct consequences for the safety of medical staff, and the treatment received by civilians and hors de combat. For example, the Panel has received information on multiple "disputes" between patients, their caregivers, and staff, because hospitals lack qualified doctors, the necessary medicine and equipment, or other resources to treat all patients to the extent required. These incidents were reported from Ta'izz and Hudaydah. Three of the more serious incidents are highlighted in a confidential annex. All parties should take all necessary measures to ensure that medical workers are protected, and that civilians under their protection have access to basic medical services.

[365] Statement with Panel.
[366] Statement with Panel.

Annex 53: Attacks against health workers

(STRICTLY CONFIDENTIAL)

Annex 54: Obstructions to the delivery and distribution of humanitarian assistance

(STRICTLY CONFIDENTIAL)

Annex 55: Full list of abbreviations

A/C	Aircraft
AGM	Air to Ground Missile
a.k.a	Also Known As
AK	*Avtomatik Kalishnikov* (assault rifle)
AMR	Anti Material Rifle
AQ	Al-Qaida
AQAP	Al-Qaida in the Arabian Peninsula
ATGM	Anti-Tank Guided Missiles
ATGW	Anti-Tank Guided Weapon
BLEVE	Boiling Liquid Vapour Explosions
BMP	Best Maritime Practices
BVI	British Virgin Islands
CDE	Collateral Damage Estimate
CIHL	Customary International Humanitarian Law
CMC	Cluster Munition Convention
CMF	Combined Maritime Force
CRC	Convention on the Rights of Children
CTF	Combined Task Force (CMF)
DADP	Di-Acetone Di-Peroxide
DFFC	Directional Focused Fragmentation Charge (IED)
DIO	Defence Industries of Iran
DPRK	Democratic Peoples' Republic of Korea
DShK	*Degtyaryova-Shpagina Krupnokaliberny* (Heavy Machine Gun (HMG))
DWT	Dead Weight Tonnage (Tonnes)
E	East
ESH	Explosive Storehouses
FAE	Fuel Air Explosion
FFREM	French Frégate Européenne Multi-Mission
F of I	Figure of Insensitiveness
FS	French Ship
GBU	Guidance Bomb Unit
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GLC	Global Logistics Cluster
GPC	General People's Congress
GWT	Gross Weight Tonnage
HE	High Explosive
HEAT	High Explosive Anti-Tank
HMAS	Her Majesty's Australian Ship

HMG	Heavy Machine Gun
HMTD	Hexa-Methylene Triperoxide Diamine
HSV	High Speed Vessel
ICRC	International Committee of the Red Cross
IDP	Internally Displaced Person(s)
IED	Improvised Explosive Device
IEDD	Improvised Explosive Device Disposal
IHL	International Humanitarian Law
IMO	International Maritime Organization
ISIL	Islamic State in Iraq and the Levant (*Daesh*)
ISIS	Islamic State of Iraq and Syria / Islamic State of Iraq and Al-Sham
ISTAR	Intelligence, Surveillance, Targeting and Reconnaissance
KE	Kinetic Energy
km	Kilometre(s)
LLI	Lloyds List Intelligence
LMG	Light Machine Gun
LNG	Liquid Nitrogen Gas
m	Metres
m^3	Cubic Metres
MEKP	Methyl Ethyl Ketone Peroxide
mm	Millimetre(s)
MMPP	Minimal Metal Pressure Pads
MMSI	Maritime Mobile Service Identity
MoU	Memorandum of Understanding
MSN	Manufacturer's Serial Number
MT	Mega-Tonne(s)
MV	Merchant Vessel
N	North
NEC (Q)	Net Explosive Content (Quantity)
NFP	National Focal Point
NGO	Non-Governmental organization
NK	Not Known
OCHA	Office for Coordination of Humanitarian Affairs (UN)
PBIED	Person-Bourne IED ('suicide bomber')
PC	Patrol Craft
PCIED	Projectile Controlled IED
PIR	Passive Infra-Red
PKM	*Pulemyot Kalashnikova (Modernised).* (LMG)
RAN	Royal Australian Navy
RCIED	Radio Controlled Improvised Explosive Device
RCL	Recoilless Gun

RDX	Hexogen or Cyclotrimethylenetrinitramine
RGD	*Ruchnaya Granata Distantsionnaya* (distance hand grenade)
RPG	*Ruchnoy Protivotankovyy Granatomyot* (shoulder launched anti-tank rocket launcher)
RSADF	Royal Saudi Air Defence Forces
RSAF	Royal Saudi Air Force
SAA	Small Arms Ammunition
SEMG	Somalia and Eritrea Monitoring Group
SGBV	Sexual and Gender-Based Violence
SPM	Ships Protection Measures
SVD	*Snayperskaya Vintovka sistem'y Dragunova* (sniper rifle)
SVIED	Suicide Vehicle IED
TATP	Tri-Acetone Tri-Peroxide
TBC	To Be Confirmed
TNT	Tri-Nitro Toluene
UAE	United Arab Emirates
UK	United Kingdom
UN	United Nations
UNCT	UN Country Team
UNHCR	UN High Commission for Refugees
UNICEF	United Nations Children's Fund
USD	United States Dollar(s)
USN	United States Navy
USS	United States Ship
UVIED	Under Vehicle Improvised Explosive Device
VOIED	Victim Operated Improvised Explosive Devices
WFP	World Food Programme
WSS	Weapon Storage Sites
YAF	Yemen Armed Forces

17-00300